



THE BRITISH JOURNAL OF TUBERCULOSIS

Vol. III.

July, 1909.

No. 3.

EDITORIAL.

OPEN-AIR LIFE FOR CHILDREN.

THE two greatest discoveries of modern days are the value of children and the virtues of an open-air life. The history of the child-life of the British Isles this year will ever be memorable for the initiation of the Children Act, the Magna Charta of childhood. This and the recently procured legislative powers providing for the medical inspection of children in elementary public schools, together with much educational effort to arouse interest in the scientific study and protection of infancy and childhood, have at last aroused the nation to the wisdom and necessity of safeguarding itself from decadence by preserving its coming citizens from all deteriorating agencies and securing means for their fullest development. Truly there can be no wealth worth winning without health. The evils incident to the increasing urbanization of the people of these isles are forcing upon the attention of even the least observant the urgent need for giving the benefits of an open-air life to the little ones. The remarkable benefits accruing to delicate and diseased children by a rationally conducted open-air life is steadily leading to the application of like methods in the protection and preservation of mental and bodily fitness in the relatively healthy. Many and varied efforts are being made to provide something of an open-air life for even the most neglected children. For some time there has been a slow exodus into the country of public schools for the children of the well-to-do.

Now a strong wave of educated opinion is urging the establishment of open-air schools for the children of our cities, and this movement is so sane and its results so satisfactory that it cannot but rapidly gain in force and extent. In the present issue of this Journal an attempt has been made to afford reliable information regarding open-air schools, and to indicate some of the other means by which children may be protected from tuberculosis and other diseases, or, when afflicted, won back to health.

Germany has proved pioneer in the establishment of forest schools, and France has for long sought to care for her young subjects by establishing marine and other sanatoria. America is now manifesting great activity in the development of open-air institutions for children—schools of outdoor life, playgrounds, school farms, country colonies, and even town and city gardens. These and like movements should be initiated in connection with every large centre of population, not only in this country and throughout America, but in every civilized land.

Tuberculosis prevails among children to an extent but little realized. Lack of hygienic conditions in the home and insanitary procedures in the school are undoubtedly accountable for much of the tuberculous disease which cripples and kills so many of those on whom the future of the nation should have depended.

The movement to establish open-air schools for tuberculous and tuberculously disposed children is one which must secure the sympathy and support of both hygienists and educationalists. The carrying on of instruction in accordance with natural methods of living is helpful, not only to the building up of a strong body, but to the development of a sound mind. There is every reason to believe that the advantages which accrue to delicate and diseased children from an open-air life will speedily teach us the wisdom of providing prophylactic outdoor instruction for the healthy. At all events, it is clearly the duty of all education authorities throughout the country to consider the best means by which the advantages of an open-air existence may be made available for the school-children under their care.

The City of New York has set the civilized world an example worthy of imitation by the establishment of a "Bureau of Child Hygiene" in connection with the Department of Health. This, from an economic as well as a humanitarian standpoint, is sound policy, for no more valuable service can be rendered the State than the preservation of the health of its children.

Of this we may be sure, tuberculosis will never be exterminated from our midst so long as infection in home and at school is allowed to continue.

SPECIAL ARTICLES.

GERMAN METHODS IN THE PREVENTION AND ARREST OF TUBERCULOSIS IN CHILDREN.

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AND

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THE combat against tuberculosis has largely helped to develop that side of medical science and service which concerns itself rather with guarding the health of the community than with curing the sick individual. In this work the medical man and the social hygienist meet on that borderland which lies between practical medicine and national health. The national health can only be improved by improving the habits of the masses, and thus preventive medicine eagerly welcomes all social and civil efforts which are directed towards the general elevation of the nation's culture.

The Hygienic View-Point.

In Germany the keepers of the nation are learning the economic value of the *individual*, and recognize the expediency of safeguarding his health. This is where the medical man and the social politician join hands in a hygienic crusade which ignores all class and party distinctions. The result of this unity of purpose is shown in the steadily decreasing morbidity and mortality returns of the German Empire. Particularly gratifying in this connection is also the hearty co-operation existing between German civil organizations for the public welfare and private charitable efforts. This wise co-operation prevents overlapping, and secures the utmost economy that circumstances allow.

Much has been effected in the combat against tuberculosis; but every forward step serves to show us with increasing clearness how much still remains to be done if ever we are to approach those ideals of prevention which inspired us when we first took up the fight.

Germany's most energetic efforts are directed towards protecting those sections of humanity which are most exposed to the onslaught

of the disease—*i.e.*, industrial workers, children, and young people. We wish to present in our present paper a very brief survey of what are considered the most important measures for safeguarding the *children* of the German nation from tuberculosis. We cannot go into those theoretical aspects regarding the channels of infection which have led to a pronounced conflict of opinions with respect to the necessity for, and the reasonableness of, the various lines of defence. They include the classic "dust-inhalation" theory of Cornet, Flügge's theory of infection through suspended "droplets" of sputum, and Von Behring's contention that tuberculosis has an exclusively alimentary origin, and is always contracted in early childhood.¹

But in giving even the briefest survey of German methods of prevention, stress must be laid on the earnest importance attached to healthy motherhood, and on the fact that Germany starts its campaign against tuberculosis by protecting the pregnant woman, and thus protecting her unborn child.

The Hygiene of Motherhood.

The State protection of motherhood is mainly secured by clauses in the Workmen's Imperial Insurance Laws.² These confer on local authorities power to provide working women, who have insured at least six months prior to confinement, with compensation for loss of work for six weeks before the birth of the child, attendance of a midwife, and medical advice when necessary.

Professor Mayet³ is the chief mover in a scheme for a general compulsory motherhood insurance. This would secure further material benefits to women of the working class without the slightest taint of pauperization.

The protection of lying-in women is also secured by legislative powers. According to § 37, Section V. of the Industrial Regulation, a woman may under no circumstances work in any factory or workshop for four weeks after delivery, and during the succeeding two weeks may only work if a registered medical practitioner certifies that this is permissible. This regulation applies to all lying-in women, whether married or single. This provision against a too early return to work would defeat its own ends unless a corresponding provision were made for the nutrition of the mother during the period of enforced idleness. This is secured by § 20, Section III., of the Sick Insurance Law of 1903, which grants sick-pay to every lying-in woman for a period of six weeks after her confinement, provided she has been

¹ These and other pathological considerations receive full notice in "Tuberculosis in Infancy and Childhood." Edited by T. N. Kelynack, M.D. London: Baillière, Tindall and Cox. 1908.

² Insurance Laws of June 15, 1883; April 10, 1892; and May 25, 1903.

³ See Professor Mayet's paper on "Motherhood Insurance," in the Transactions of the International Conference on Workmen's Insurance. Rome. 1908.

insured for six months before the birth of the child, either in a State *Krankenkasse* or in the parish sick insurance. In some cases the husband's insurance secures maternity grants. According to the draft of the new State Insurance Regulation, the period for a grant of maternity sick-pay will be lengthened into eight weeks—*i.e.*, two weeks before and six weeks after the birth of the child.¹

Infant Life Protection.

Broadly speaking, the interests of infant mortality prevention and of tuberculosis prevention are inseparable, for what the preservation of infant life aims at is not only keeping babies alive, but also at giving them a good physical start in life.² All measures, therefore, which are the outcome of this aim are equally measures against susceptibility to tuberculosis. Very important among such are those which encourage *breast-feeding* in every possible way. The recent increase in the number of breast-fed children has been attributed to the system of giving *nursing premiums*, or nursing pay, under supervision, to mothers who need nourishing food. The *nursing rooms* attached to factories where women are employed are also influencing breast-feeding. Failing breast-feeling, the next best thing is the provision of a clean, wholesome milk-supply at moderate cost. In this line Germany has done excellent work. Milk is, generally speaking, one-third cheaper in Germany than it is in England. The regulations against adulteration are very stringent.

State Guardianship of Children.

All children who lack the proper parental care are considered the "wards" of the State, and since 1906 there is a special department—the *Berufs-Vormundschaft* (or State Guardianship)—whose business it is to guard their interests.³ The duty of selecting homes for such children is entrusted to specially appointed officials or to responsible voluntary workers, and under no circumstances are the children allowed to enter homes where a member of the family is consumptive. As the State Guardianship now extends its supervision to children who are allowed to remain in their own homes, but who are

¹ This draft also includes sections of the population hitherto exempt from compulsory insurance—notably, domestic servants. If enforced, approximately 11,000,000 persons will be added to the number of persons under compulsory insurance in Germany.

² The value of these protective measures has recently been clearly and fully dealt with by Dr. Samter, of Charlottenburg ("Die Fürsorge für Säuglinge und Mütter in Charlottenburg," *Soziale Medizin und Hygiene*, Bd. iv., No. 2). Charlottenburg is altogether distinguished by its remarkable enterprise in every department of social hygiene and public welfare, and several of its institutions are worthy of the most careful study.

³ One very important consequence has resulted from State guardianship: while the mortality among *legitimate* children has been practically at a standstill since its institution, the mortality among *illegitimate* children has markedly decreased.

necessitous or predisposed to tuberculosis, it has become an important factor in preventive work.

The Care and Control of the School Child.

At the age of six, children enter into the province of School Medical Inspection. That this inspection is of vital importance in connection with tuberculosis is shown by the statistics published by Kirchner,¹ Privy Councillor to the Prussian Kultus and Medizinal Ministerium. He has demonstrated that the children during the school age do not participate in the general decline of mortality from tuberculosis that has taken place in Prussia between 1876 and 1903, but that, on the contrary, the age groups from four to fifteen show a considerable increase. From his statistics, Kirchner draws the conclusion that, in spite of the prevalence of measles, whooping-cough, and other children's diseases, tuberculosis is the disease which is most to be feared during school age, and that the energies of school doctors should be specially directed towards its prevention. It is here, then, where so much is earnestly hoped from the system of school medical inspection.

The German system is, generally speaking, thorough and efficient. It must be remembered, however, that Germany has an enormous area to cover, and that in many remote country districts the difficulties to be encountered are such as have no parallel in England.²

Inspection weeds out the manifestly tuberculous, the scrofulous, and the debilitated child, and is thus a factor of unlimited value, as it renders a timely prophylaxis possible. Now that school doctors have an authority over the hygiene of the school building itself, it is to be hoped that more attention will be paid to two points of vital interest in guarding the health of the scholars: first, *to the daily wet-dusting of all surfaces within reach*,³ and, secondly, *to the prevention of promiscuous spitting*.⁴

¹ Kirchner: "Die Tuberkulose und die Schule." Berlin: Richard Schoetz, 1906.

² Professor Leubuscher, the President of the Society of School Doctors (the Secretary of this society is Professor Leubuscher himself, and the offices are in Meiningen), states that there are between 1,500 and 1,600 school doctors distributed among 400 towns (*Medizinische Reform*, No. 49, 1908). Country schools are still, however, inadequately inspected, though their hygienic condition is far below that of the town schools. The upper schools are also, unfortunately, exempt from inspection in most cases.

³ Fürst, M.: "Ueber die Reinigung der Volksschulklassen, *Zeitschrift für Schulgesundheitspflege*, Vol. xvi. 1903. In Bremen, the experiment has recently been made of cleaning schoolrooms with a *vacuum cleaner*. See *Deutsche Viertelyahrschrift für öffentliche Gesundheitspflege*, Bd. xxxix., Brunswick; and *Soziale Medizin und Hygiene*, Bd. iii., p. 523. Hamburg: Leopold Voss.

⁴ The evil of promiscuous spitting is best obviated by the provision of hygienic spittoons, placed at convenient levels. The best form are those supplied with running water. See "Spuckgefäß in der Schule," by M. Fürst, *Das Schulzimmer*, vol. vi. Berlin: Müller. 1908. In February, 1907, a Bavarian district council issued a very sensible official order, strongly condemning the use of handkerchiefs as receptacles for expectoration.

It is self-evident that any child or teacher with "open" tuberculosis is a source of danger to other occupants of the schoolroom. In 1907 both the Saxon and the Prussian Ministry issued regulations providing for the bacteriological examination of the expectoration of any teacher or scholar presenting features suggestive of phthisis (emaciation, pallor, lassitude, cough, etc.), and for the exclusion from the schoolroom of those found on examination to be harbouring the tubercle bacillus.

In the way of practical measures, Germany has done much to arrest tuberculous proclivities among school-children. The first of these is *school feeding* (*Schulspeisung*). This includes the distribution of milk only (or milk and white bread) and the provision of substantial daily dinners (soup, meat, and vegetables). The municipality bears either the entire cost (as in Charlottenburg, Breslau, Magdeburg, and Mannheim), or co-operates with private charities.¹ The Freemason lodges in Germany have been very liberal in this respect.

Gratuitous Medical Service.

Where the parents are necessitous, sickly children receive free medical treatment from the sick insurance doctors or from the Poor Law medical officers. Quite recently the German Poor Law has been amended, and a recipient of Poor Law medical treatment does not thereby lose his citizen rights. The Poor Law medical department has largely interested itself in diminishing tuberculosis among children, and is doing very valuable work on these lines.²

School Dental Clinics.

The increasing number of school dental clinics is another factor of great importance. Tuberculosis has very frequently been found associated with extensive dental caries, and Professor Ernst Jessen, of Strassburg, who was the founder of these clinics, has shown in his reports how urgent was the need for them. In the year 1906 over 18,000 children were treated in the Strassburg School Dental Clinic, yet the year's expenses amounted to little over £400.³

¹ Simon, Helene: "Schule und Brot." Hamburg: Leopold Voss. 1907. This book states that in seventy-nine towns of over 20,000 inhabitants the school-children are fed, the cost being mainly borne by the municipality. See also Seydel (Town Councillor in Charlottenburg): "Die Mittagspeisung der Schulkinder Charlottenburgs," *Archiv für Volkswohlfahrt*, vol. ii., No. 3.

² Samter and Kohlhardt: "Die Aufgaben der Armenpflege in der Bekämpfung der Tuberkulose." Leipzig: Dunker and Humblot. 1904.

Consult also Fürst, M.: "Die Stellung und Aufgaben des Arztes in der öffentlichen Armenpflege." Jena: Gustav Fischer. 1903.

³ Jessen, Prof. Ernst (Strassburg): "Die Zahnpflege in der Schule," in "Das Schulhygienische Taschenbuch," pp. 171-176. Hamburg: L. Voss. 1907.

Children's Sanatoria.

For actually tuberculous children Germany has eighteen sanatoria, containing in all 837 beds. But there are close on 100 institutions which receive children who are scrofulous or debilitated, or otherwise likely subjects for tuberculosis.¹

It is in this respect that the Imperial Insurance System is of such enormous value; the ample resources at the command of the Insurance Bureaux enable them to advance sums for building sanatoria where these are most required. As life at a sanatorium is mainly an outdoor life, most of them close during the winter. An experiment has recently, however, been made of keeping a North Sea sanatorium open all winter, and with the most encouraging results.²

Forest Schools.

We have left forest schools almost for the last, but they deserve the first place in importance as a means of increasing the powers of resistance in debilitated children. The forest school is an invention of which Germany has every reason to be proud. It rapidly justified its existence by results of a highly satisfactory order, and was found to be a measure with everything to recommend it. In the forest school we get a unique combination of healthy, happy child life with systematic care, good feeding, and the best kind of education. Not only is every possible measure adopted to make the children healthy, but they are taught *the value* of health, how to keep healthy, and the vital importance of clean living, fresh air, and sensible feeding. That the interests of ordinary school education do not suffer is evident from the fact that, though the lessons are fewer and shorter, the forest school-children keep up very well with

¹ Nietner, Prof.: "Der Stand der Tuberkulose Bekämpfung," "Bericht des Deutschen Zentral-Komitees zur Bekämpfung der Tuberkulose," 1908.

Lohse gives the following figures in "Kinderheil und Erholungsstätten." Leipzig: Dunker und Humblot, 1907.

Class.	Character of Institution.	Number of Establishments.	Number of Available Beds.
A. Sanatoria with brine baths	..	41	4,472
B. Sanatoria for sea-bathing	..	22	2,164
C. Climatic stations and mineral baths	..	28	1,304
D. Open-air sanatoria for pulmonary tuberculosis	..	6	284
		97	8,224

In ten open-air sanatoria for adults children are also received. In 1906 the above establishments received 30,599 children, distributed as follows:

Class A	..	..	18,847
.. B	..	..	6,171
.. C	..	..	4,801
.. D	..	..	780
			30,599

² Treplin: "Erfahrungen aus dem Hamburgischen Seehospital 'Nordheim-Stiftung' im Jahre 1907," *Soziale Medizin und Hygiene*, Bd. iii., pp. 233-239.

the town children, and are generally able to join their proper age groups on returning to the town schools. The children do not, as a rule, sleep in the forest school, but are fully fed there. The following allowance is made for each child: Milk, 2 pints; meat, 100 grammes; vegetables, 200 grammes; and an ample quantity of white bread and rye bread, butter, dripping, and jam. The children have five meals—at 7.45 a.m., at 10 a.m., at 12.30 p.m., at 4 p.m., and at 6.30 p.m. In Charlottenburg the parents pay 6d. a day where this is possible, but in destitute cases no charge is made. Much importance is attached to hydropathic treatment in the forest schools, and in Charlottenburg provision is made for brine baths in addition to the ordinary warm baths and shower baths.¹

Forest Camps.

There are as yet only three large well-known forest schools in Germany; but there are a large number of minor institutions on similar lines called *Walderholungsstätte*, or forest recreation camps. There are eighty-two of these forest camps for adults, in some of which children are admitted, and nineteen exclusively for children. In some of them teaching in some form is also given. In 1906, 1,728 children visited these camps. They come early in the morning, receive three good meals and a plentiful supply of milk, and return to their homes in the evening.

The main accommodation is afforded by a large shed, open on one side, in which the children shelter in bad weather. Such a forest camp, with its shed, offices, bathrooms, and lavatories, can be installed for £200 to £250. These institutions, owing to their "picnic" character, are very popular, both with adults and children, and are eminently educational. Popular lectures on hygienic subjects are given in some of them, the audience being seated in an amphitheatre under the trees. Germany is fortunate in abounding in woods and forests which are ideal quarters for this purpose.

Health Stations.

We can only briefly mention *holiday camps* and *colonies*, and *holiday homes* where children are boarded out. There are seventy-nine societies for providing children with holidays, and in 1906, 17,085 children were sent away, generally in batches of twenty-five to thirty-five.

¹ Sandt, H.: "Waldschulen," in "Das Schulhygienische Taschenbuch," pp. 260-265. Hamburg: Leopold Voss. 1907.

Neufert: "Waldschulen," in "Verhandlungenheft zur Zeitschrift 'Gesunde Jugend,'" Bd. vi. Leipzig: B. G. Teubner. 1906.

Neufert und Bendix: "Die Charlottenburger Waldschule im Isten Jahre ihres Bestehens." Berlin: Urban und Schwarzenberg. 1906.

For cost of forest schools see H. Lindemann and A. Suedekum: "Kommunales Jahrbuch," pp. 239-240. Jena: Gustav Fischer. 1908.

After-Care Stations.

Nachpflege, or "after-care" stations, do an incalculable amount of good, and are of great importance in securing permanent benefit from remedial measures. Hamburg has an excellent system of this sort, which is under the rule of the "Municipal Charity Organization." Children who have been sent away during the summer are afterwards kept under systematic observation, and conditions which militate against the lasting benefit to be derived from the summer outing are remedied as much as possible. This "Organization for the Continued After-Care of Children" recommends their protégés for school feeding, for milk lunches, for prolonged medical supervision under the Poor Law, and for a repetition of the summer outing.¹ This system is of such great value that it merits thoughtful attention and copy.

Schools for the Tuberculous.

We cannot close this sketch of remedial and preventive measures against tuberculosis among children in Germany without alluding to the excellent work done by the *Fürsorgestellen* (*dispensaires*), or "care stations" for consumptives, which are of the nature of "schools for the tuberculous," run on lines similar to "Schools for Mothers" and "Infant Consultations."

Lastly, the widely spreading provision of bathing facilities and of playing-grounds for children are factors for physical advancement which, in conjunction with the serious and energetic attention with which Germany is tackling the housing problem, give one hopes of an improved national physique in the coming generation among the mass of the German people.²

¹ In the autumn of 1906, the Hamburg After-Care Station examined 726 children, and recommended 89 for school feeding, 584 for milk lunches, 355 for continued medical supervision, and 525 for a repetition of the summer outing in 1907.

² Tables of forest schools, sanatoria, etc., are given in "Jahresbericht des Deutschen Zentral-Komitees zur Bekämpfung der Tuberkulose," Berlin. See also Professor Nietner's article on "Tuberculosis among Children in Germany," in "Tuberculosis in Infancy and Childhood." London: Baillière, Tindall and Cox. 1908.

For particulars regarding arrangements for bathing, see article on "Arbeiter bäder," by Regierung-Rat W. Treptow (Charlottenburg). The use of shower-baths by the working classes is strongly advocated, and also the training of school-children to appreciate bodily cleanliness (*Archiv für Volkswohlfahrt*, vol. ii., No. 3).

THE OUTDOOR SCHOOL FOR TUBERCULOUS CHILDREN, BOSTON, U.S.A.

BY MISS ISABEL F. HYAMS

AND

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M.D.,

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At the present time it is generally agreed that our American schools have heretofore concentrated their work on the intellect. They have devoted themselves to that which is bookish, and have failed to realize the essential relationship of efficiency to the soundness of the body. The importance of the physical preservation and upbuilding of the pupils is seldom indicated in the courses of work laid out for them, yet physical development is the most important element in the life of a child. Unquestionably this care of the health should be provided in the child's own home, but it is evident that in the majority of instances this demand is not adequately met there. It must, however, be remembered that a large part of the child's life is spent in school, and that even the best efforts at home to make the child healthy and strong may fail if conditions at school are bad, as they so often are.

A large part of the work which is now undertaken for the prevention of tuberculosis and other diseases and the upbuilding of health can be most effectively carried out through the school, and later reaching out to the home. We wish not only to have children free from disease, but children who are strong and vigorous.

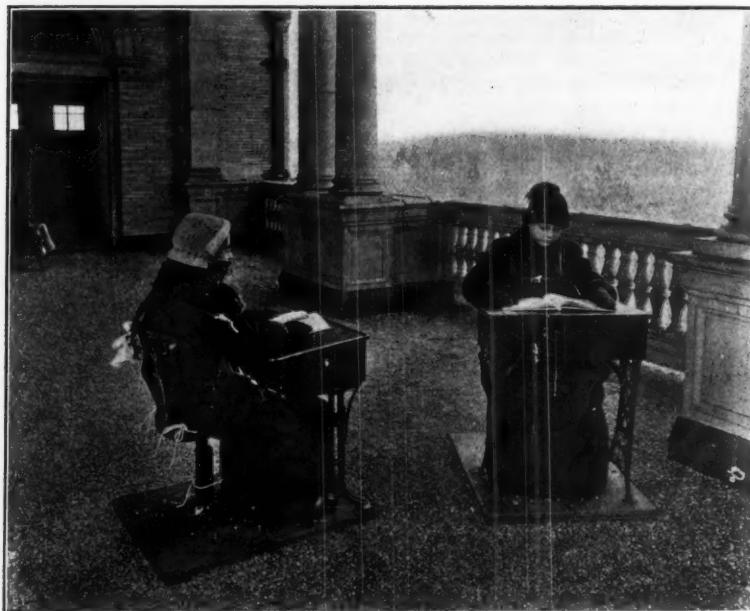
Of all the diseases that affect mankind, there is none which is the cause of more economic and social distress and waste than tuberculosis. It is estimated that, unless there shall be a decided change for the better, 8,000,000 of the population now living in the United States will die from consumption. That this fearful loss of life can be checked is the firm belief of medical scientists.

Among the methods now employed are the dissemination of scientific knowledge regarding the character of tuberculosis and care of patients in their homes, sanatoria for incipient cases, and comfortable hospitals for advanced cases. In these directions progress has already been made; but as yet very little has been done for the child, and surely the outdoor school is one step farther in the right direction. Such schools are to be found in Germany; but the first real outdoor school in this country was started last July, on Parker Hill, by the Boston Association for the Relief and Control of Tuberculosis.

Providence had a school a year earlier, but this was in a room of an old school-building in which some of the windows were constantly open.

It should never be lost sight of that a "school" for tuberculous children is primarily and always a place where children with early tuberculosis can be cured, and where the restoration of health, not learning, is the real object to be attained.

The equipment on Parker Hill consisted of a lean-to used as a



CHAIR BAGS OF WEATHER-PROOF CANVAS LINED WITH BLANKETING, AND SPECIAL ULSTER COATS, WOOL MITTENS AND STOCKINGS AND OVER-SHOES KEPT THE CHILDREN WARM IN ALL WEATHERS.

kitchen, toilet-rooms with shower-baths, etc., and a large marquee tent for a dining-room and shelter in stormy weather. Three meals a day were served. The children spent their time caring for their vegetable and flower gardens, assisting with the housework, and in rest and in play. No formal instruction was attempted.

So satisfactory were the results obtained by the end of the summer that the Association decided to ask the Boston School Committee to co-operate with them and establish an outdoor school. This the

School Committee readily agreed to do. The Public School Department supplied the teacher, the desks, books, etc.; the Association undertook to supply the necessary clothes, food, nurses, attendants, home inspection and care, and the medical service. Up to January 14 the school was held in the tent, notwithstanding the fact that the water froze regularly at night in the camp kitchen.

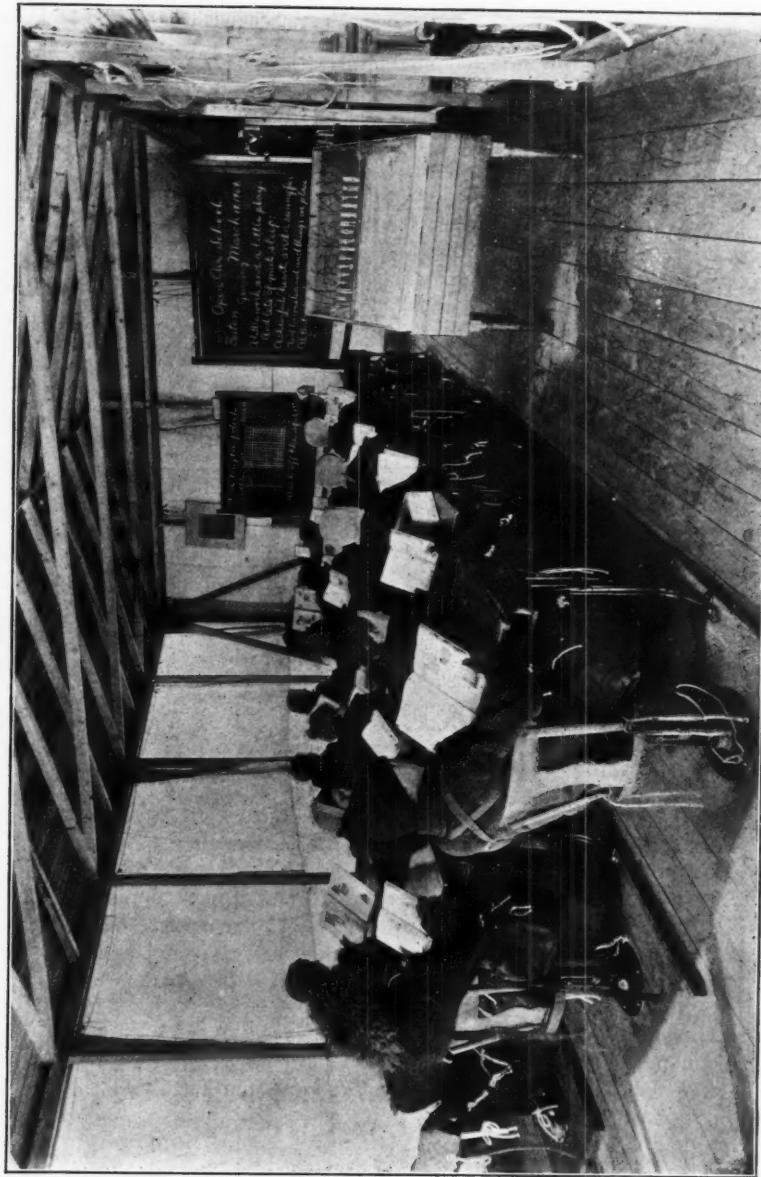
In Franklin Park is a large building originally erected for a refectory, with two dining-rooms, one on the first story and the other on the roof. That on the first story is used as a branch of the Public Library. The Park Commission was applied to for the use of the rest of the building for the school. This request was granted. Upon the roof of the building the City has erected a tent schoolroom. In this schoolroom, on a flooring raised from the ground, are twenty adjustable desks and seats, and at the farther end of the room is the teacher's desk. The tent is made of a portable frame about 30 feet long, 25 feet wide, and 15 feet high; over this is a wooden roof, and on the four sides are canvas curtains, which can be lowered in stormy weather. In addition to the tent, there is inside the building a kitchen and dining-room, toilet-rooms, rest-room, and an emergency class-room also fitted up with desks, but which has never been used.

On entering the school, each child is furnished with a reclining chair and blankets, a long warm overcoat, over-shoes, bag made of paraffined canvas to keep out rain and wind, and with a detachable blanket lining to sit in, woollen cap or hood, mittens, drinking-cup and toothbrush, each of which is numbered and remains the property of the child while in the school. The child's own overcoat, wet shoes and stockings, are replaced during school hours by those belonging to the school.

The daily routine is as follows: The children arrive at the school at 8.30 a.m. and have their breakfast. After breakfast all but four are ready to begin lessons. These four, remaining in the dining-room, clear the tables, wash and dry the dishes, etc. The time between breakfast and dinner is devoted to their regular grade work, divided into twenty-minute periods, and exercises. At 12.30 p.m. dinner is served, and again the children help to set tables and wait at table. After dinner they are required to remain quiet and sleep if possible for one hour, and then their regular school work is again taken up. At 4.30 p.m. a light supper is served, and at 5 o'clock the children return home.

Cleanliness is insisted upon, and one of the rules of the school is that faces and hands must be washed before meals, and teeth brushed after each meal.

In some cases, at first, the child is not well enough to do much more than lie in his chair. At any time when a child does not seem well, lessons are omitted, and he spends the time in his chair at rest.



A SCHOOLROOM WITH NO WALLS BUT CANVAS CURTAINS TO CONTROL RAIN, SNOW, AND WIND, NO HEAT, LOCATION FURNISHED BY THE PARK COMMISSION. BUILT AND EQUIPPED BY THE SCHOOLHOUSE COMMISSION AND THE ASSOCIATION, ADMINISTERED BY THE SCHOOL BOARD AND THE ASSOCIATION

The diet, which is a very simple one, is planned so as to give variety and a proper amount of the different food constituents. The following are two sample menus with their approximate food value :

I.

Breakfast : Cocoa, bread-and-butter, sliced banana.

Luncheon : Stew of rice and mutton, bread-and-butter, milk, dessert, figs.

Supper : Milk, gingerbread.

Form of Food.	Amount, Ounces.	Proteid.	Fat.	Carbo- hydrate.	Calories.
Cocoa (two cups) ...	18	19.06	23.42	37.86	451.17
Bread ...	4	10.50	1.3	59.70	301.0
Butter ...	1	0.24	28.7	—	221.0
Banana (one) ...	3.4	0.85	0.42	15.20	77.18
Rice and Mutton ...	10	46.8	29.2	37.00	619.0
Bread ...	2	5.2	0.06	29.8	150.0
Figs (three) ...	2	2.61	0.18	45.11	—
Milk (three glasses) ...	26	24.93	30.22	37.77	532.0
Gingerbread ...	2	5.22	5.73	40.3	235.6
	68	115.41	119.23	302.74	2586.95

II.

Breakfast : Cocoa, Graham gems, butter, stewed prunes.

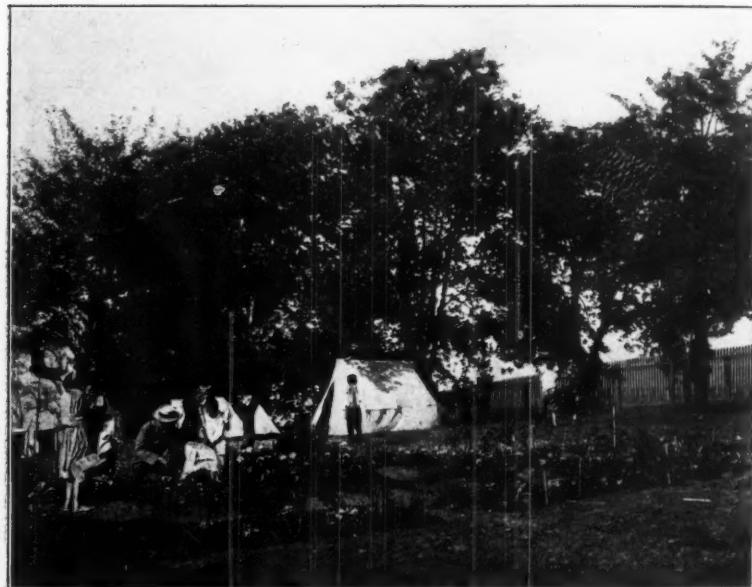
Luncheon : Creamed codfish, mashed potato, bread, milk, dates and nuts.

Supper : Milk, crackers and cream-cheese.

Form of Food.	Amount, Ounces.	Proteid.	Fat.	Carbo- hydrate.	Calories.
Cocoa (two cups) ...	18	19.06	23.42	37.86	451.17
Bread ...	2	5.2	0.06	29.8	150.0
Butter ...	1	0.24	23.7	—	221.0
Graham gems ...	4	7.5	3.0	44.0	245.3
Stewed prunes (dry) ...	1	0.4	—	17.05	71.9
Creamed codfish ...	4	19.0	9.0	19.9	265.0
Mashed potato ...	4	3.0	5.0	18.0	125.0
Peanuts (in shells) ...	1 $\frac{1}{2}$	7.0	10.5	6.7	155.0
Dates (six) ...	1 $\frac{1}{2}$	0.31	0.8	24.78	111.4
Crackers ...	2	4.64	3.20	33.8	186.8
Cheese ...	0 $\frac{5}{8}$	4.22	5.49	0.39	69.9
Milk (three glasses) ...	26 $\frac{3}{8}$	24.93	30.22	37.77	532.0
	66	95.50	114.39	270.05	2584.47

In addition to the meals taken at the school, the children have milk and bread, or cereal and milk, or sometimes an egg, before leaving home in the morning, and again a light meal on their return home at night. This brings the total full value of the food eaten during the day up to about 3,000 calories, which is probably high for a normal child, but not for these tuberculous children.

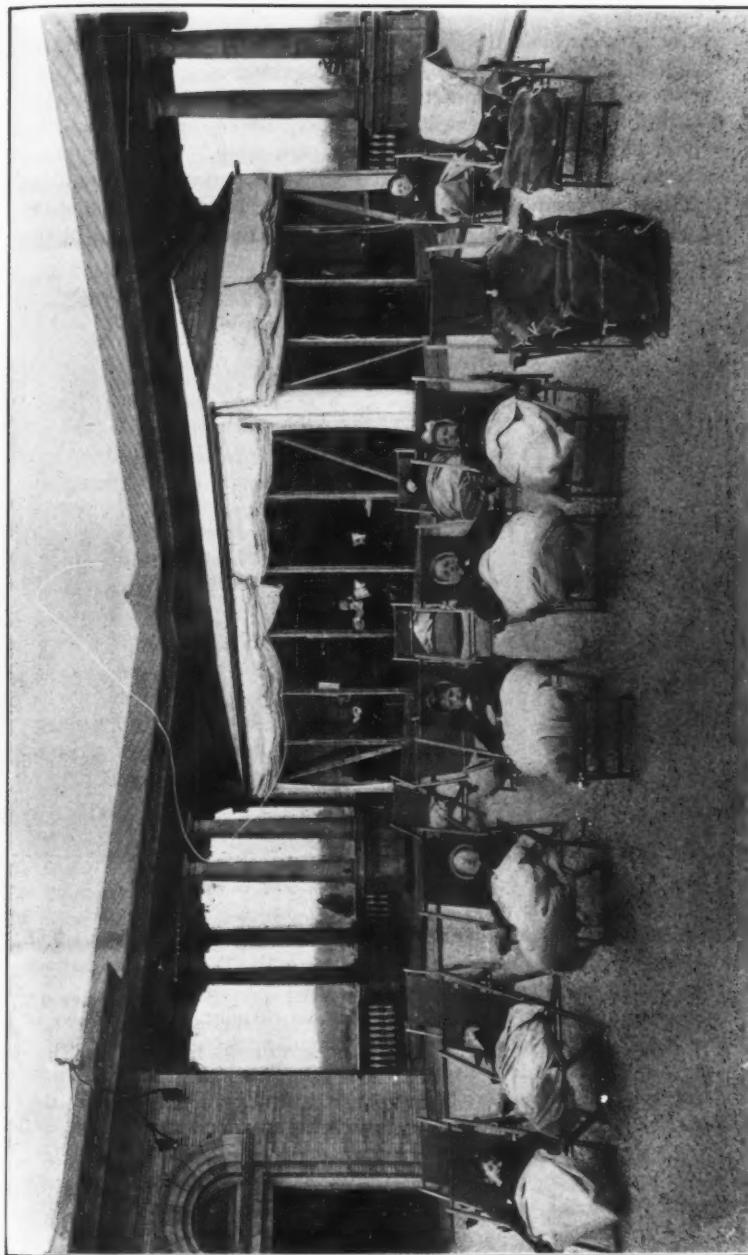
The children are weighed and have their temperatures taken every day. The Association nurse takes them to the dental clinic,



IN THE GARDENS GREW TEN KINDS OF FLOWERS AND SEVEN OF VEGETABLES.

to have their teeth put in order ; to the Eye and Ear Infirmary, to get glasses for those who need them ; makes provision in settlement houses or public baths for children who have no bathing facilities in their own homes to get a cleansing bath once a week, and encourages a cold sponge-bath every morning. Once in two weeks they are examined at the Out-patient Department of the Boston Consumptives' Hospital.

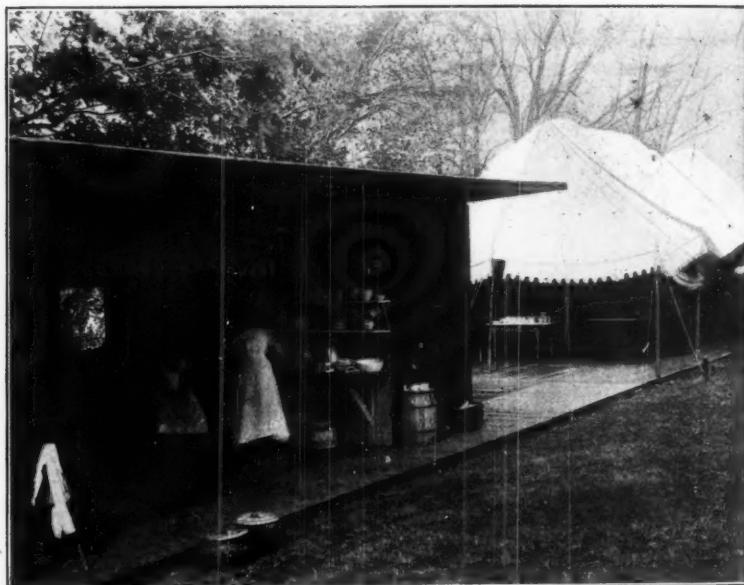
The school is kept open on Saturdays and during the holidays, under the supervision of a kindergarten teacher, supplied by the Association. It is intended to continue to care for these children



REST HOUR ON ROOF OUTDOOR SCHOOL, REFECTORY BUILDING, FRANKLIN PARK.

at the Association's Children's Day Camp in the summer, and so complete the cure if possible, and prevent relapses.

A child is recommended for admission by the physician of the Boston Consumptives' Hospital Out-patient Department to the Committee of the Association in charge of the work. This Committee in turn recommends the child to the School Department, transmitting to the department the physician's statement of the examination of the child's lungs, and having first seen that the child is provided by the



KITCHEN, PANTRY, AND DINING-TENT, PARKER HILL.

parents or by some charity with proper clothing and so forth. The child is then transferred by the school authorities to the outdoor school. The discharge of the child follows the same steps.

All the children have originally shown distinct physical signs in the lungs, but no advanced or even moderately advanced "open" cases are admitted. The expectoration, in those cases that had any, soon ceased, except for a little in the mornings, which continued a somewhat longer time. When discharged from the school, they are visited in their homes by the nurse, and taken to the Out-patient Department at regular intervals for observation and care. In every case their homes have been under the constant supervision of the

Association's nurse, and have been improved hygienically during their attendance at the school, so that conditions are more favourable for a continued improvement in health.

We are coming to see, in all lines of educational and social work, that it is not enough to educate the people who go to school, but that we must go beyond the schools, and by various methods reach the parents also, so that they shall have brought to them some definite information which may help them in their daily lives. Literature of various sorts is useful, but does not make a deep enough impression on the average man or woman. To make the work really effective, it must be carried out through the teacher, who can actually demonstrate the things she desires to teach.

Realizing the importance of this home instruction, the Association has employed a trained social worker to teach the mothers of these children whatever they seem to need most, such as the purchase, preparation, and cooking of food, care of the home, etc.; but the experiment has been carried on for too short a time to give any definite results.

At first no charge was made for anything, though the Association felt that eventually the parents should be made to pay something for the food at least, in order to impress on them that they too had some responsibility for the care of their children. For some time now each child has brought 10 cents every day. In those cases where the family, on careful investigation, was found to be too poor to give them this, the money has been supplied by some charity.

During the winter the School Committee appointed a committee of physicians to consider the problem of tuberculosis in schools, and to make recommendations for dealing with it. Briefly, this committee reported that advanced cases should be entirely excluded from schools; that for the hopeful and closed cases outdoor schools should be provided; that for the many sickly children perhaps already tuberculous, but at all events good candidates for infection, every school-house should have one room where the windows were always open, in which these children should be collected. The committee further stated that they recognized the serious problem that would confront the School Committee if they undertook to supply food and clothes for one class of school-children, and to avoid this difficulty recommended that that part of the undertaking be placed under the care of the Hospital Department, who could readily supply these necessities as they would for other patients under its care, without fear of criticism or difficulty of eventually being called upon to feed all school-children. That is, that the outdoor school should be a hospital day-camp for children where school is held.

As a result of this report, the School Committee and the Consumptives' Hospital Trustees are now working out the details of a joint management of outdoor schools for next year, and one of the new school-houses is to be built with an open-air schoolroom.

The cost of this undertaking is rather difficult to estimate, because of various changes and movings from time to time. Apart from the cost of the school-teacher and school equipment, which is the same as for any other school, the cost of raw food per child is about 20 cents a day, and the cost of preparing and serving the food, together with all the other expenses incurred beyond the school expense, is about 30 cents a day. These figures do not include cost of equipment. Another year, and on a larger scale, these figures should be reduced.

Medically, the results have been most satisfactory. Of the first thirty-one children who had been at the school one month or more previous to February 1, seventeen had had their tuberculous process arrested, and returned to the regular public school, and in each case without loss in their school grade. Six others of these thirty-one left the school for one reason or another, mostly because they moved away from Boston. Of the seventeen cases, all are known to be well now, and to present no physical signs in the lungs, with the exception of one. This one came from the family living under the worst conditions. Repeated efforts to improve their home or persuade them to move to a better one failed until recently. Now they have been moved to a good tenement in the less crowded part of the city, and their prospects for betterment are immensely improved. This child was not taken to the hospital for examination as ordered, but finally was brought by the nurse when it was found that the child had lost weight, looked badly, and again showed signs of disease in the lung. The child was readmitted to the school. This case showed the need of the most careful and long-continued supervision of the home.

From an educational point of view the results have also been most satisfactory. The children have become more alert mentally, and have shown considerable increase in attention to work. They have improved in appearance, are neater and cleaner, have better manners, and are more orderly.

So successful has been the undertaking that now constant requests are made by parents that their children may be admitted, some even offering to pay any price for the privilege. The economic value of such a school is evident. The money spent in educating a child who dies of tuberculosis is wasted.

THE NATIONAL IMPORTANCE OF OUTDOOR SCHOOLS.

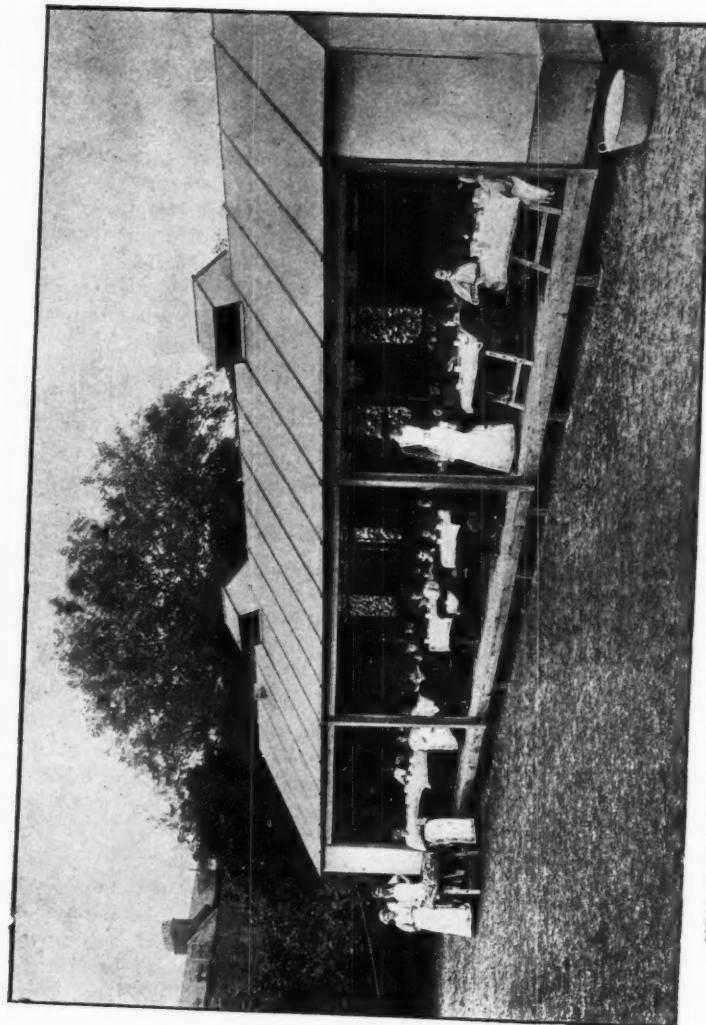
BY DR. FREDERICK ROSE,
M.A.

FEW educational innovations of recent years have touched the popular imagination so quickly and so deeply as open-air or outdoor schools. Commenced a few years ago at Charlottenburg, the results obtained with comparatively simple equipment and common-sense treatment and teaching have been most remarkable. From Charlottenburg the movement spread to other parts of the German Empire. Then London took up the movement, and in some respects improved upon the original methods. London's example has been watched by the provinces, and Bradford, Halifax, Leeds, and other towns are following suit. The American teachers who visited England last year have taken back with them their impressions of London's outdoor schools, and this year Boston, Chicago, Milwaukee, and other great American cities are pushing forward the establishment of open-air schools.

The problem of the establishment of a large number of open-air schools in London is an extremely difficult one, because of the great lack of suitable spaces. Spaces in the great parks, commons, and open spaces cannot be enclosed and the necessary light structures erected, because the Parks Acts stand in the way. School playgrounds cannot be utilized, because they are quite unsuitable for the purpose, and are, moreover, needed by the other children. Outdoor schools cannot be established by the London authority outside the county boundary, according to the present interpretation of the Education Acts. The latter help the outdoor school movement so little that even the three present schools have to be run under the Epileptic (Education) Act of 1899.

We are compelled, therefore, to fall back upon large private gardens, with adequate vegetation and quiet or rural surroundings, within the London area. Those to be had are very few in number, and then, most unfortunately, they do not as a rule lie in or near the congested areas where they are required, but in prosperous districts. Even when a suitable site is found, it is, compared with ordinary elementary schools, very expensive, because of the rent required and the temporary structural alterations and adaptations.

This question of expense is unfortunate, because it hinders the spread of outdoor schools. As a matter of fact, as far as buildings



MEAL-TIME AT THE LONDON COUNTY COUNCIL'S OPEN-AIR SCHOOL AT KENTISH TOWN.

are concerned, outdoor schools should cost about two-fifths less than ordinary heavy school-buildings.

It seems clear that the question can be solved in one way only—that is, the passing of a brief and non-contentious Education Act—say one or two clauses only—enabling London to establish open-air schools outside the county.

Such schools will not be day-schools, but residential schools. The advantages in favour of the latter type are many and indisputable. In the first place, the benefit to the children will be a double one. Six months' stay at a residential open-air school will be equal to a year at an open-air day-school, because the children will have the benefit of pure air, proper sleep, and quiet and clean surroundings during the whole of the twenty-four hours. In this way a residential open-air school, open the whole year, will treat double the number of children, as compared with the day open-air school. As far as maintenance is concerned, it is clear that as the children are fed in both types of schools, the further expenditure for simple sleeping accommodation need not be very great. As the schools can lie in the country forty or fifty miles from London, land can be bought in larger quantities, at greatly reduced prices, and with a wide variety in choice of sites. The buildings will be of fairly durable materials, of an artistic nature, and will be so constructed as not to cost more than £20 per place and to enable the children to be in the open air during practically five-sixths of the whole year, wholly by day, partially by night.

Let us now consider the part to be played by open-air schools in the prevention of tuberculosis, one of the classes of ailments with which they have to deal.

Tuberculosis in early life is probably less fatal than in adults. In attempting to procure reliable figures, we are faced by the old difficulty that investigators will not agree to work upon a uniform statistical basis. Sometimes they are based on mortality statistics—mostly from children in hospitals—sometimes on the results of clinical investigations. Whichever method is adopted, the results are alarming enough. In any case, we know definitely that children are very susceptible to tuberculous infection; that its presence is less evident, its results less fatal than in adults. But the most significant fact is that tuberculous disease remains more frequently in a latent form in children, and is, therefore, probably responsible for many sickly, ill-developed, and backward children. If such children are forced into crowded, badly aired schoolrooms, and, in addition, burdened with school strain for six hours of the day during eight or nine years of their young lives, what must happen in many cases? Body-resistance is lowered, the latent disease gains the upper hand, and tuberculosis, in some form or other, develops.



LESSONS AT THE LONDON COUNTY COUNCIL'S OPEN-AIR SCHOOL AT SHOOTER'S HILL.

Now, quite briefly, what are the four great factors in the struggle against tuberculosis? Fresh air and suitable movement, scientific nutrition (including care of the teeth), proper sleep, and treatment when young. Nowhere can these factors be more fully or more universally utilized than in open-air schools, preferably those of a residential type.

The Boston committee put the matter briefly and accurately: "A child spends a large part of its life in a schoolroom. Strong and healthy children are those who have spent the most time in the open air. Life in the open air is the best investment one who is not strong can make. The nearer a schoolroom can approximate to the open air, the larger will be the return to the city on its investment in schools." I thank them for those words.

Open-air schools, of course, are not merely convalescent homes. To regard them as such would be a grave error. Their province is to teach and cure at the same time. The fact alone that in the future some 3 to 5 per cent. of all children in large towns may have to be treated in this manner forces us to consider carefully the educational side of the question, because large numbers of children cannot be withdrawn from the ordinary schools for long periods without their instruction being continued. The school-buildings of the future will be of a very different type, as a result of the experience gained in open-air schools. They will cost less, and the resultant saving will be devoted to the acquisition of larger spaces and every form of improved hygienic and educational apparatus. The curriculum, too, of the future school will be very different, as a result of the transference of the school-work from the closed class-room to the open air. It will be less literary, less abstract and unpractical, and will come into touch with actual observation and conditions and every possible form of outdoor activity.

It is curious to observe by what devious ways we are stumbling on the right methods of treatment of school-children. Take the feeding of school-children. This is by no means the mere feeding of necessitous children. It is the first step towards systematic buying, preparing, and serving of food on the most economical plan; towards the scientific body-building of the citizens of the future; towards the aesthetics of eating and the communal ideal of breaking bread with one's neighbour. At Bradford some six or seven persons, provided with the newest machinery, provide without undue efforts 4,000 scientifically prepared dinners daily. The careful study of methods of teaching mentally and physically defective children have taught us the secrets of brain development and its influence upon muscular activity, and paved the way for the education of normal children in the future. In a similar manner open-air schools, originally estab-

lished for debilitated school-children, are pointing the way towards a reform in the whole system of elementary schools. It is by the condition of its elementary schools, not of its technical schools or Universities, that the future of the nation will be decided.

OPEN-AIR SCHOOLS.

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[We are indebted to the courtesy of Messrs. Hasserodt and Co., 31, Queen Street, London, E.C., for the loan of the blocks from which the accompanying illustrations have been prepared. These illustrations show the excellent type of Doecker buildings supplied by this firm. An illustration of "Resting Time at the London County Council's Open-Air School," at Horniman Park, Lordship Lane, appeared in this year's January number of *B. J. T.* An illustration of Dr. Frederick Rose's "Model of a Residential Open-Air School," appeared in the issue of *B. J. T.* for October, 1908.—EDITOR, *B. J. T.*]

THE OPEN-AIR SCHOOL MOVEMENT.

By RALPH CROWLEY,

M.D., M.R.C.P.,

Medical Officer to the Educational Committee of the City of Bradford.

THE open-air school movement started in the provinces last summer, when schools were opened at Halifax, Norwich, and Bradford. That at Bradford was not ready for use until the summer was nearly over, but the two months during which it was open served entirely to convince the members of the Education Committee of the necessity of such a school, and I think it is not too much to say that it has already become one of the recognized educational establishments of the city. This year the Committee with, practically, unanimity decided to extend the accommodation from that for 40 to that for 120 children.

Arrangement of the School.

The original school was a galvanized iron building consisting of two class-rooms, and had been previously used in connection with one of the elementary schools of the city. It will now be utilized as the kitchen and common dining-room of the new open-air school. On either side of this will be a row of three class-rooms of the simplest structure, approached by a covered way running along the back of them. Each class-room will open directly on to a teaching verandah. In addition to the three class-rooms, there will also be a resting-shed on each side of the dining-room. The school is planned with the idea of obtaining the maximum advantage to the children as regards fresh air compatible with the climate of the West Riding of Yorkshire.

There will be no inducement to use the class-rooms unless really necessary. By having a teaching verandah opening out of the class-room, and by providing a light and easily portable desk and chair for each child, there will be no excuse for using the class-room if the weather permits the use of the verandah. All the lessons possible will, of course, be taken out in the open and in the wood. This latter is almost an essential part of an open-air school. During a hot summer, especially, it will be difficult to get the full advantage of the school without a shady wood where the children can remain all day. The school, too, must be actually in the wood or, at any rate, on its borders.

Size of the School.

This is a matter of importance. It is better to have a sufficiently large site, and a good-sized school with accommodation for up to, say, 120 children, than several smaller schools, since classification, and consequently the teaching, is easier. There is, too, an advantage in having children of all ages at the same school, since the older children, both boys and girls, can do much to assist, in one way or another, in the general and domestic work of the school. This leads to both a family and communal feeling. A larger school is preferable also, since some of the children require the services of the school nurse, and it is hardly possible to arrange for a nurse to visit daily if there are but one or two children requiring her attention.

Selection of the Children.

A list of suitable children has been kept, gleaned from among those attending at the school clinic, whither children are brought who are not in attendance at school, or who attend only irregularly. This list has been supplemented by names recommended by the attendance officers and by the head-teachers. Many children who cannot stand the confinement in school or the pressure of the ordinary school curriculum, and consequently may never attend a school at all, do excellently at the open-air school. The proportion of children specially suitable for this kind of treatment will depend very much on individual opinion. One may safely say that 1 per cent. of the school population of any large town require such provision, while it would not be difficult to select five times that proportion. The children fall for the most part into the following categories :

1. "Delicate" children, usually thin and pale.
2. "Nervous" and excitable children who ramble and start in their sleep.
3. Children suffering from the "dregs" of chorea.
4. Anæmic children, especially such as are found in some of the poorer schools, and whose condition is largely due to insufficient and improper food and lack of fresh air.
5. Children suspected of tuberculosis or with incipient phthisis.
6. Children suffering from diseases of the lungs—as, for example, bronchitis—or from heart disease.
7. Debilitated children suffering from blepharitis or any form of external eye disease or from otorrhœa.
8. Young children suffering from rickets.

Curriculum.

This has been drawn up on the lines of other open-air schools. When the extension of the school is complete, each child will have a

shower-bath at least twice weekly, unless exempted on medical grounds. Special attention is paid to breathing and physical exercises. Every opportunity is taken to train the children in neatness and orderliness—*e.g.*, the children have each their own brush and comb, towel and tooth-brush. Each child rests for a minimum time of one and a half hours after the mid-day meal; several sleep on considerably longer. Some of the children—*e.g.*, those with heart disease—rest also after each of the other meals.

Results.

These cannot be estimated in many cases until children have been watched over for a long period—years in some cases. The immediate results obtained at the open-air school at Bradford last year were very satisfactory as shown by improvement in general appearance and carriage, effect on nutrition as indicated by weight, effect on the proportion of haemoglobin in the blood, and by the effect on chest-girth measurement. The improvement in the proportion of haemoglobin as measured by a von Fleischl's haemoglobinometer was particularly striking.

Open-air Schools for Tuberculous Children.

The satisfactory treatment of tuberculous children demands the provision of (1) a school sanatorium, and (2) an open-air school reserved for these children. To the former all children suffering from pulmonary tuberculosis should go in the first place, and any other tuberculous children for whom it might be thought suitable. Each child would, of course, be considered individually. Some would require, perhaps, to be in bed all day; others might be allowed an hour of school-work; while the majority probably could follow the ordinary curriculum of an open-air school. Children on their discharge from the sanatorium should attend a special open-air school, which might, of course, be on the same site as that provided for the children generally. This double provision is at present engaging the serious attention of the Bradford Education Committee.

Open-air Schools for Crippled Children.

In the future the provisions for these children should be on the lines of the open-air school. Cripple schools should not be provided in the centre of the town, even though this may be more convenient from the point of view of transit. The open-air school, too, is undoubtedly the right kind of school for feeble-minded children, and Norwich has taken an excellent lead in this direction. It provides the kind of life feeble-minded children require, and affords special facilities for their physical and moral training.

ORIGINAL PAPERS.

THE CHEMICAL COMPOSITION OF TUBERCULOUS EFFUSIONS.

By OSKAR C. GRUNER,

M.D.,

Clinical Pathologist, Leeds General Infirmary; Author of
"Studies in Puncture Fluids."

JUST as the cytological characters of tuberculous effusions are frequently so distinctive that they may be employed as a basis for clinical diagnosis, so there are certain facts about the chemical characters of this class of effusion which are deserving of notice from the point of view of clinical diagnosis or prognosis.

In order to present an account of the chemical composition of these tuberculous fluids within the space at disposal, it will be necessary to merely enumerate the various points, without entering, at present, into as full a commentary on the facts as is desirable.

1. The *Specific Gravity* of an exudation is (as is well known) usually above 1020, and tuberculous effusions in the later stages agree with exudates in this respect. However, exceptions have frequently been met with, especially in early stages of effusion, when the specific gravity varies from 1014 to 1017.

2. The *Total Proteid* is best ascertained by direct weighing. The precautions necessary in preparing a complete coagulation of the proteid have been described elsewhere.¹ The results are fairly decisive, and Engländer's researches may be referred to, since he has made very extensive observations (1908). It was found that tuberculous effusions contain a *minimum* of 3 per cent. of proteid, and that the older the condition, the higher the percentage of proteid present. In basing a diagnosis of tubercle on the fact that the proteid percentage is greater than 3, one must decide, on clinical grounds, that there is no possibility of carcinomatosis. The most reliable results, in my experience, obtain in the case of peritoneal effusions; whereas in pleural effusions one is apt to have a low percentage of proteid even in tuberculous cases (early stage). The error is, however, avoided by following a golden rule: Examine the

¹ See the author's work on "Studies in Puncture Fluids," pp. 12, 20. London: H. K. Lewis. 1908.

fluid on at least two successive dates, and contrast the chemical characters. This, of course, applies to doubtful cases.

3. *Globulin* is usually only present in small amount, especially so in the case of peritoneal tubercle.

4. *Albumoses*.—These vary in different cases; deuteroalbumose β is frequently present, but as a rule the presence of the various albumoses is in favour either of cirrhosis of the liver or of carcinoma. *Peptones* are always absent.

5. *Leucin*, *tyrosin*, and other *amido-acids* must not be expected. They are invariably absent as long as possible autolytic processes are excluded.

6. *Urea* is frequently present in trace, but *purins* are usually absent.

7. *Mucins* are more frequently found in pleural (tuberculous) than in peritoneal effusions.

8. *Cholesterin* was found in one case of longer standing. *Lecithin* has not been found in any of the specimens examined.

9. *Colour Reactions*.—The Molisch and tryptophane reactions have been systematically applied to a long series of fluids of all kinds, and some important conclusions may now be offered. The deductions to be made depend, however, on the particular method of carrying out the tests, and a description of this must be reserved for a future occasion. One may meanwhile remark that pleural tuberculous effusions almost without exception give a "negative" Molisch reaction and an instant, and intense, tryptophane reaction.

10. *Rivalla's Test* is a simple one. A 100 c.c. measure is filled with distilled water, two drops of glacial acetic acid added, and well mixed with the water. A single drop of the fluid to be tested is allowed to fall on the acidulated water by means of a glass rod, and a positive result is indicated by a trailing white cloud which increases as the drop descends. This reaction must be present before one can affirm an effusion to be tuberculous, though it is not specific for tubercle. A negative result means no tubercle.

11. *Müller's Test* consists in adding a single drop of the fluid to a little Millon's reagent in a watchglass. If tuberculous, the drop of fluid will become a firm pellicle, which does not readily break up with a platinum wire, and does not stain the reagent. Experience has shown that in many cases the test answers, although it was originally designed for the examination of *pus*. There are four conditions to be allowed for: (1) There must be no fibrin; (2) there must be no blood or synovia; (3) a time-limit must not be given; (4) no other organism than tubercle must be present. The explanation of the reaction lies in the fact that tuberculous fluids contain no peptonizing ferment which will destroy the proteid of the fluid. The deposit from these fluids consists mainly of the non-proteolytic ferment-bearing lymphocytes.

12. *The Müller-Kolaczek's Biological Reaction* is based on absence of proteolytic ferment from these fluids. Without entering into the details of the test we may point out that proteolysis can occur in purely tuberculous pus—(1) if iodoform has been used for treatment; (2) if there is a mixed infection; or (3) both conditions obtain; (4) anti-ferment action has to be remembered as a possible contingency. The last point is under investigation.

13. *Drug Tests*.—It has been found by Landolfi that administration of sodium iodide causes no reappearance of the drug in the effusion in cases of tubercle.

14. *Inorganic Constituents*.—The concentration of *chlorides* varies from 0.024 to 0.087, the higher value being met with in a case of long standing. The content in chlorides is decidedly higher in peritoneal tubercle than in pleural. *Phosphates* are usually present in only very small amount.

15. The total concentration of *Electrolytes* varies from 0.179 to 0.343, with an average of 0.236 for peritoneal fluids, and 0.299 for pleural. The detailed significance of these observations is considerable, and has been dealt with elsewhere. It is, however, worth calling attention to the fact that in *early* stages of tubercle the "salt" ratio may remain below unity.

16. The *Osmotic Concentration* is usually rather higher than normal. It varies between 0.297 and 0.313, when it approaches that of blood.

The above condensed notes will, it is hoped, be of service to those who propose making excursions into this new and promising field of research.

SANITARY TENEMENTS FOR TUBERCULOUS FAMILIES.

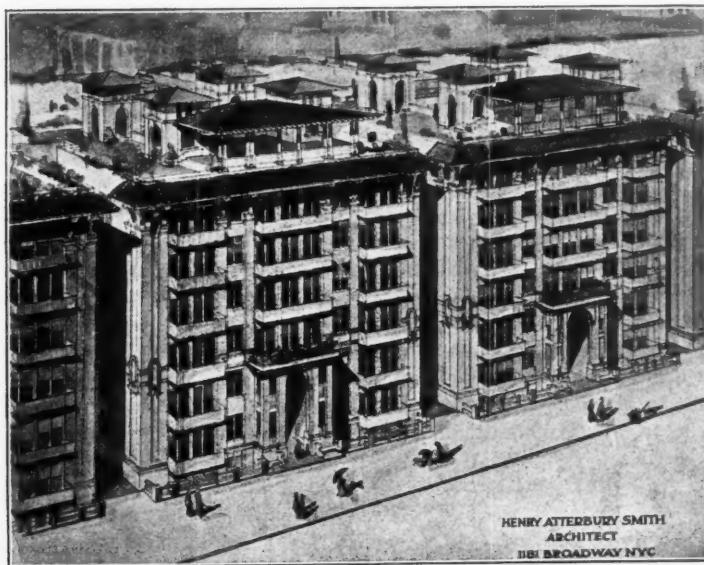
By HENRY L. SHIVELY,

M.D.,

Physician in Charge, Presbyterian Hospital Tuberculosis Clinic, and Visiting Physician to St. Joseph's Hospital for Consumptives, New York.

It has long been felt by thoughtful physicians, who come much in contact with tuberculous disease in the poorer classes of society, that for any lasting benefit to accrue to them the problem must be more vigorously attacked in the home itself. Valuable as are sanatoria in the treatment of tuberculosis, their greatest usefulness will probably always consist in the care of the well-to-do patient, who can put hygienic measures into practice, and continue after leaving the sana-

torium the right mode of hygienic living, which alone makes probable his permanent recovery. The lesson inculcated at great cost in the sanatorium is largely lost upon the poor patient, who, after a brief sojourn amid the ideal conditions of a well-conducted institution, is returned to the squalid living conditions which generated his disease. Relapse is almost inevitable, and there is a bitter pathos and tragic irony in the hard situation of the intelligent consumptive who has



NEW YORK SANITARY TENEMENTS FOR TUBERCULOUS FAMILIES.

learned how to live in order to keep well, and who by reason of his poverty cannot do so in the wretched homes of the poor in large cities.

It has for several years been a cherished plan of the writer to attempt in some degree the solution of this difficulty in the treatment of the tuberculous poor, by the erection of a type of building in which tuberculous families might live and enjoy at low rentals many of the best features of sanatorium life. This idea has been developed in the sanitary tenement, the practical accomplishment and actual construction of which have now been made possible through the munificence and wise philanthropy of Mrs. William K. Vanderbilt senior, who has devoted 1,000,000 dollars to the purpose of building four such tene-

ments in New York City. Upon a site admirably suited to the purpose, adjoining one of the small city parks, and fronting on two streets, these buildings are now in course of construction. When completed, they will house about 400 families, and will be conducted in connection with the Tuberculosis Clinic of the Presbyterian Hospital of New York. A number of novel architectural features will be introduced. There will be ample courts for air and sunlight, to which access will be had through passage-ways extending from street to street, designed similarly to the *Durchhäuser* of German and Austrian cities. Outside staircases in each of the four corners of the courts will afford separate entrance to each suite of rooms, thus insuring greater privacy and eliminating entirely the dark, ill-ventilated, disease-breeding interior hall and staircase, which are such abominations in the ordinary type of city tenement. Bedrooms and living-rooms are placed in the front of the buildings, and are provided with open-air balconies communicating with the rooms by large windows, hung in three sections, extending from floor to ceiling, thus making the balconies continuous with the floor areas, and encouraging their liberal use for outdoor sleeping and dining. The roofs are to be fitted with open loggias, toilet-rooms, seats, and shrubbery, making them as attractive as possible, and utilizing them to the fullest extent for fresh-air treatment and outdoor life, which can be continued with comfort for nearly the entire year in the almost subtropical climate of New York. Every apartment will be heated from a central hot-water system, and in the kitchens gas-ranges will be installed, provided with exhaust hoods to carry off the odours and vapours of cooking. Tubs and showers with hot-water supply will insure every facility for baths. In the basements will be laundries, drying closets, and a disinfection plant. The construction throughout will be of steel, terra-cotta, and concrete, and will be absolutely fireproof.

It is believed that this type of dwelling will not only be an efficient aid in the actual treatment of cases of incipient tuberculosis, but an even greater benefit will be its influence as a measure of prevention, in extending to the healthy members of the patient's family the protection of a hygienic home. The clinic physician and visiting nurse are well aware of the appalling frequency with which other unsuspected cases of tuberculosis, especially among children, are found in the families of consumptives applying for treatment in our dispensaries. Better living conditions will prevent the development of disease in delicate, anaemic individuals who otherwise would be favourable candidates for tuberculosis. In these sanitary tenements the advantageous, hygienic environment will be supplemented by the watchful supervision of physicians and nurses. As is the case

with every other potent instrumentality in the warfare against tuberculosis, there will accrue many other incidental benefits. The sanitary tenements will encourage cleanliness, temperance, thrift, and all the social virtues which make for a higher plane of living.

A NOTE ON THE DISINFECTION OF SPUTUM AND SPUTUM-FLASKS.

BY DR. G. SCHRÖDER,

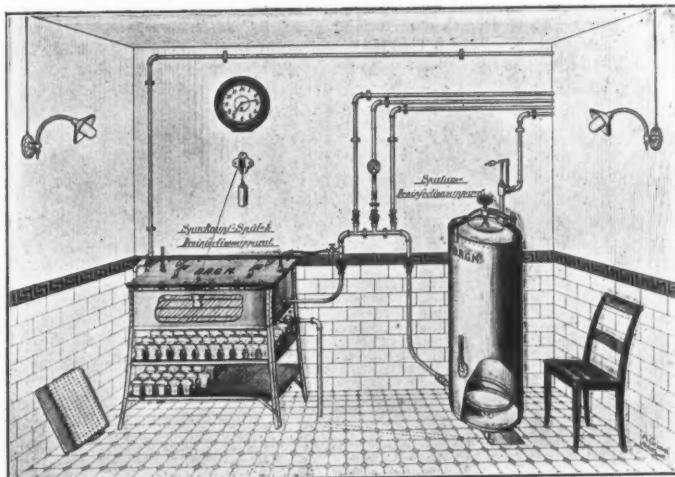
Medical Superintendent of the New Sanatorium for Pulmonary Tuberculosis
at Schömberg, near Wildbad, in the Black Forest.

EVERY well-equipped and scientifically directed sanatorium for the treatment of consumptives is compelled to provide efficient means for the safe, speedy, and economic disposal of sputum and the disinfection of sputum-flasks used by the patients. A short description of the new apparatus which we have recently introduced for the disinfection of sputum and sputum-flasks in the Neue Heilanstalt für Lungenerkrankte, at Schömberg, near Wildbad, in the Schwarzwald, will, I think, be of interest and practical service to readers of this Journal. Our apparatus has the advantage of being both simple and inexpensive. The sputum is disinfected by means of overheated steam.

The *Sputum Disinfector* consists of a boiler with a sieve. All the sputum of the patients is poured out into the boiler. More compact particles and other solid substances which by accident have got into the sputum remain in the sieve, where they are disinfected by the steam. The steam enters into the boiler through a circular tube, which is provided with little spray-holes above and below. When using the disinfector, not more than three-quarters of the boiler is filled with sputum, after which the boiler is replaced and the steam turned on. The steam, which is pressed downwards, stirs up the sputum, which has previously settled at the bottom of the boiler. After twenty minutes the steam-supply is stopped, and the off-flow opened, thereby carrying the whole contents of the boiler into the drain. Hot and cold water is then turned on, and in passing through the same circular tube effects a thorough cleaning of all parts.

The *Spittoon Disinfector* serves the purpose of disinfecting, cleaning, and thoroughly rinsing out spitting-flasks, etc., used by the patients. The apparatus consists of a box of rectangular shape, opening with a well-fitting lid, resting on four legs, between which two shelves are fixed. The supply of steam and hot and cold water to the bottom

and to the lid (carried to the latter by means of a rubber tube) is the same as that provided for the sputum disinfecter, but instead of a circular pipe, these pipes have the shape of a frame (quadrangular), with cross connections. In these pipes there are little holes, the distance between each equalling the diameter of a spitting-box. The holes in the lower pipes are provided with little spray-heads, which point perpendicularly upwards, while the corresponding holes above give the effect of a shower downwards. A wide-meshed wire net is placed over the lower pipe system to secure a firm stand for the



INSTALLATION FOR DISINFECTION OF SPUTUM AND SPUTUM-FLASKS AT
THE NEW SANATORIUM FOR PULMONARY TUBERCULOSIS AT
SCHÖMBERG, IN THE BLACK FOREST.

upturned spitting-flasks. There is also a wide off-flow, with tap at the bottom; at the side a high-pressure valve and a removable thermometer fixed into the lid similar to the arrangement in the first apparatus.

The practical working of the two disinfectors is performed as follows: The spitting-boxes are collected from our patients' rooms, and placed with the contents of the vessels from the w.c.'s, in which the patients empty their pocket spitting-flasks into special tin trays, which can be easily cleaned. They are then emptied into the sieve of the sputum disinfecter, and placed one by one over the little spray-heads above mentioned. The lids are then tightly closed and the steam-supply opened for twenty minutes. Then follows the

washing with the hot and cold water-supply. A sudden change from hot to cold must be strictly avoided. The final rinsing out finishes the disinfection, and all that remains now is the removal of paper, etc., which has been caught up in the sieve. The spitting-boxes are then placed on shelves to dry, when they are ready for the patients' use once more.

The foregoing description, although necessarily brief, will be, I trust, sufficiently explicit, and the accompanying illustration will indicate the main features and general arrangement of our plant.¹

¹ The apparatus was constructed by Mr. Fr. Keser, inspector of the new sanatorium at Ahremberg, and is described in greater detail in the *Zeitschrift für Tuberkulose*, Band 14, Heft 2, 1909. Leipzig: Johann Ambrosius Barth. The manufacturers are Messrs. F. and M. Lautenschläger, Chausseestrasse 39, Berlin, N.

VIEWS AND REVIEWS.

CHANNELS OF TUBERCULOUS INFECTION.

SINCE the epoch-making discovery of the tubercle bacillus of Koch more than a quarter of a century ago, researches innumerable have been conducted with a view to the detection of the various paths by which invading tuberculous organisms gain access to human and other living tissues. But, in spite of all, considerable mystery still surrounds the subject of tuberculous infection. Although much has been revealed, much yet remains obscure and uncertain. The opinions of skilled investigators differ widely, and the conclusions drawn from experiments by no means always coincide. And yet for the rational application of preventive measures securely established truths in regard to causal factors are essential. Probably no question relating to the tuberculosis problem is of greater moment than that relating to the channels of tuberculous infection. So important and pressing is this matter that we have sought to further its solution by the presentation of communications expressing the views of certain well-known and representative pathologists.

FROM PROFESSOR A. CALMETTE,¹

M.D.,

Director of the Pasteur Institute, Lille, France.

The investigations upon tuberculous infection which I have carried out since 1905, in collaboration with C. Gueron, have demonstrated that it is possible, by means of the repeated ingestion of a sterilized tuberculous virus or by the ingestion of a *single* dose of virulent tubercle bacilli, to confer upon animals, more especially bovines, a very marked resistance to artificial infection with tubercle bacilli given by way of the alimentary canal.

We had to discover next whether this was a true immunity of more or less prolonged duration, proved not only by the absence of any reaction to tuberculin, but also by the total destruction of the virulent bacilli in the various groups of lymphatic glands of the body.

By slaughtering one by one at different times from month to month a series of eight heifers from eighteen months to two years

¹ We are indebted to Dr. Newman Neild for the English translation of Professor Calmette's communication.—EDITOR B. J. T.

old, we have been able to show at first that in bovines previously submitted to vaccination by way of the alimentary canal the organisms absorbed after the ingestion of a test-dose of virulent bacilli are entirely destroyed after from four to six months' time, and even by the end of the third month only a few still survive in the mesenteric glands. This is a most interesting fact to secure, because we have shown by other experiments that when a test-dose of virulent bacilli is introduced into the body of an animal which has been vaccinated by the way of veins, and not by the alimentary canal, they remain in the glands for an indefinite period, and even after a considerable time may manifest their existence there either by the sudden appearance of tuberculous lesions in these presumably vaccinated animals, or by the experimental inoculation of these glands into guinea-pigs.

On the other hand, this very fact shows that the mesenteric glands fill a protective rôle peculiarly efficient against tuberculous infection, as they do in many other infections of intestinal origin.

Does this mean that bovines which have freed themselves in this way from previously ingested virulent bacilli possess a power sufficiently resistant to natural or artificial infection for us to consider them to be vaccinated?

The experiments which we have carried out in order to elucidate this most important question have been performed on a group of thirty-eight cows. From these experiments we draw the following conclusions:

1. By the ingestion of virulent bacilli or of bacilli modified by heat we are able to confer upon bovines a *comparative immunity*. Later on, when we test the resistance of animals prepared in this way by making them swallow virulent bacilli in a dose large enough to infect a control animal, we find that after from four to six months they are still unaffected, that they do not react to tuberculin, and that the mesenteric, mediastinal, bronchial, and retropharyngeal glands no longer contain tubercle bacilli, since these glands prove sterile when injected into guinea-pigs.

As yet no experiment has been sufficiently prolonged to allow us to say that these animals are capable of resisting for more than a year either an artificial infection by way of the digestive tract, or a natural infection acquired by living with tuberculous animals.

2. Indeed, against this is the fact that when we take bovines that have resisted for eight months or a year a large infection given by way of the alimentary canal, and presumably vaccinated in this way, and give them an *intravenous injection* of virulent bacilli sufficient to kill a control animal in from four to six weeks, we find that the vaccinated bovines, after a short period of malaise, maintain every appearance of

health for six or eight months. Nevertheless, they *retain in their bronchial and mediastinal glands virulent bacilli capable of giving guinea-pigs tuberculosis*. These bacilli give no sign of their presence, not even by a positive tuberculin reaction. But after a lapse of time, varying in length between six and eight months, these bacilli become capable of producing tuberculous lesions when the animal's immunity passes off.

3. A culture of tubercle bacilli introduced *by way of the alimentary canal* ends after a longer or shorter period by being absorbed in the mesenteric glands, when they cease to be present in numbers sufficient to produce lesions of the glands; but when a culture is introduced *by way of the veins*, the bacilli remain *alive and virulent* in the lymphatic glands which drain the thoracic organs.

4. *Tuberculous* animals or animals *made sensitive to tuberculin* by the injection of two or three large doses of that substance into the veins show a very great resistance both to reinfection and to severe tuberculous infections, both natural and artificial, even when the latter are received by way of the veins.

This resistance, although not so great, seems to be of the same nature as that which is conferred by intravenous inoculation of human or bovine bacilli (Behring, Koch, and Schütz), or of "homogènes" (Arloing), or by subcutaneous inoculation of these bacilli (Lignières, Arloing), or by the insertion under the skin of cultures of human or bovine bacilli enclosed in collodion sacs (Heymans).

It is by no means a case of true immunity, because animals which have been vaccinated in this way, although they give no reaction to tuberculin, yet remain *carriers of living and virulent bacilli*, bacilli which are capable of producing severe tuberculous lesions¹ when the resistance of the animals comes to decline; and because, on the other hand, as Roux and Vallée have shown, vaccination by way of the veins or under the skin does not protect against an intestinal infection.

These facts obtained by experiment confirm the observation made by clinicians, that it is rare to find a pulmonary tuberculosis of rapid course occurring in those who have previously suffered from a suppurating local tuberculosis, or from an apparently healed tuberculosis of the lymphatic glands.

¹ In the experiments of Melun (1906) upon animals vaccinated with Behring's bovovaccin, the bacilli had not been resorbed at the end of six months (Vallée et Rosignol, Moussu).

FROM E. J. MCWEENEY,
M.A., M.D., D.P.H., F.R.C.P.I.,

Professor of Pathology, Catholic University Medical School, Dublin ;
Pathologist to the Mater Misericordiae Hospital ; Bacteriologist
to the Local Government Board for Ireland.

The cutaneous and placental paths are not trodden by the tubercle bacillus often enough to merit discussion in a short paper. There remain the alimentary and respiratory channels. In gauging their relative importance, be it remembered that tubercle bacilli can find their way through mucous surfaces without producing a local lesion. But they are of necessity "held up" for a time in the regional lymph glands, and during their sojourn there must needs produce their characteristic structural alterations.

Minute and exhaustive study of the lymph nodes may therefore be expected to reveal the portal of entry. Positive findings in the cervical or mesenteric glands point to alimentary infection through the pharyngeal or intestinal mucosa, whilst foci in the bronchial glands indicate infection through the lungs. No one doubts that the cervical and mesenteric glands are most often affected in children. This is just what we should anticipate from the fact that milk—the oftenest infected of all foods—is so largely partaken of by children. Moreover, the intestinal mucous membrane is more permeable in infancy than in adult life, as shown by Von Behring. The exact proportion of cases primarily infected through the alimentary canal is a controversial point. The Berlin pathologists bring out the statistics of primary intestinal infection at a low figure, being influenced possibly by the well-known views of Koch. Elsewhere the tendency is in the opposite direction, more especially since the remarkable experiments of Calmette. Where the bronchial, in addition to the cervical or mesenteric, glands are found affected, it should be remembered that primary affection may have occurred through *both* channels simultaneously, or nearly so. Inspired bacilli will sometimes adhere to the pharyngeal or tonsillar region and reach the cervical glands, or, being swallowed, find their way to those of the mesentery. When the anatomical data are insufficient or conflicting, cultivation of the bacillus from the several lesions and determination of its type—human or bovine—will often solve the problem as to the mode of infection. My belief is that not more than 25 per cent. of all cases under the age of fifteen are attributable to primary infection through the alimentary tract. Be it remembered that in Japan, where cow's milk is not used for feeding children, tuberculosis is, nevertheless, quite prevalent.

In adult life there is still less tuberculosis of demonstrably alimentary origin. The highly ingenious and suggestive experiments

of the Breslau School yield conclusive evidence of the ease and rapidity with which pulmonary tuberculosis can be evoked in animals by the inhalation of bacillus-laden spray, and the same holds good to a lesser extent of infected dust. Every pathologist knows how often, apart from phthisis, the lungs of adults are found to contain minute, often blackish, nodules and scars. Careful search, not limited to the apex, has in my hands seldom failed to reveal such evidence of obsolete tubercle.

Again, the glands oftenest affected in adults are the bronchial, which receive the particulate matter (*cf. anthracosis*) from the lungs. The balance of the experimental and observational evidence seems to me, therefore, in favour of the view that the virus finds its way in by the widely open and demonstrably pervious respiratory passages rather than by devious lymphatic channels from the alimentary canal. In a word, I am an adherent of the old opinion that the overwhelming majority of cases of human tuberculosis are due to infection through the respiratory tract.

FROM J. MARTIN BEATTIE,

M.A., M.D.,

Professor of Pathology, University of Sheffield; Hon. Pathologist, Sheffield Royal Infirmary and Royal Hospital.

With regard to the much-disputed question of Channels of Tuberculous Infection, I can add one note based on considerable personal experience. Controversy has arisen as to the relationship of tuberculosis to fibrosis in the lungs of grinders, but a study of the condition makes it quite clear that on one point there can be no difference of opinion—viz., that the important channels of infection are the air-passages.

In his book, "Diseases of the Lungs from Mechanical Causes," published in 1843, Dr. Calvert Holland pointed out that in grinders the first trace of morbid action which falls under observation is irritation in the larynx, trachea, or bronchial tubes. With the improvements that have taken place in ventilation, etc., this symptom is perhaps less marked to-day, but it still exists to a considerable extent. The dust particles cause an irritation of the air-passages, and render these a more fitting nidus for the lodgment of bacillus of tuberculosis.

If the tuberculosis infection occurs early in the life of the grinder, it may spread rapidly and widely in the lungs by way of the lymphatics. If, on the other hand, the grinder escapes the tuberculous infection during his early years, the fibrosis, which is such a marked feature of his occupation, spreads gradually in the lungs, causes an obstruction

of the lymphatic channels, etc., and acts, in my opinion, as a barrier and hindrance to the spread of the tuberculous process.

The cases that have been infected late in life are generally chronic, often remain localized to certain portions of the lungs, and it is only when cavities are formed, and when the tuberculous material can be distributed by the bronchi, that general infection of the lungs takes place. It is not uncommon to find advanced fibrosed areas on which the tuberculous process has had no action.

Every clinician hails with satisfaction the occurrence of fibrosis in his cases of pulmonary tuberculosis, and every pathologist is familiar with "healed fibroid tubercle." It seems, therefore, rather anomalous that the fibrosis of the grinder should be regarded, as it apparently is, as favouring the infection with, and the spread of, tuberculosis. That tuberculosis is common, and that it, and not fibrosis, is the cause of the high mortality among cutlers and grinders, cannot, I think, be disputed. I have not seen a single case where the death was due to the lung condition in which tuberculosis was not present.

My position, therefore, is that the fibrosis, instead of being injurious to the man who is compelled to work in a tuberculosis-infected atmosphere, is distinctly favourable, because it has brought about obstruction of the usual paths of distribution, and has rendered the dissemination of *Bacillus tuberculosis* more difficult.

FROM R. W. ALLEN,

M.D.,

Clinical Pathologist and Director Department of Vaccine Therapy,
Mount Vernon Hospital for Consumption; Author of "Vaccine Therapy and the
Opsonic Method of Treatment."

That the human race may become infected either by that type of the tubercle bacillus to which the distinctive name of "human type" has been given, or by that which the more commonly inhabits the members of the bovine race, and to which, therefore, the term "bovine type" is applied, is at last conceded by all the leading authorities upon the question.

The same agreement does not exist as to whether these two are really distinct varieties of bacteria, or whether they are transformable the one into the other by alterations in habitat and environment; a necessary corollary of this latter view being the existence of members of the family exhibiting characteristics intermediate between the two extremes.

Ample evidence is now forthcoming that pulmonary tuberculosis in man can be set up by the agency of infected cattle. The extreme probability that tuberculosis may be communicated to a herd of cattle

previously free from that disease by contact with infected human beings has been demonstrated but recently by Birger Oeverland.¹ Therefore, just as tuberculosis may be set up in man by tubercle bacilli of the bovine type excreted by cattle, so tuberculosis may be induced in cattle by tubercle bacilli of the human type excreted by man; so also man, infected by the *typus bovinus* from cattle, may hand back a bovine infection to healthy cattle, and cattle infected by the *typus humanus* infect other humans with the bacillus originally coming from man.

By what paths the infection of tuberculosis is transmitted must remain for some time a highly controversial question. There are extremists who hold that practically all infection takes place by inhalation via the respiratory tract, while others maintain that the digestive tract affords the necessary path of ingress. The former consider that tuberculous disease is spread by direct infection from individual to individual; the latter that infected food is to be held responsible for the transmission of the disease.

This question I do not propose to discuss critically, but will briefly mention two modes of infection to which far too little attention has been directed, and point out their significance.

Firstly, granting that infection may be spread directly from individual to individual, it by no means follows that this has occurred via the respiratory tract. A phthisical parent, especially among the poor classes, where a whole family may live in one room, spits upon the floor where a young child may be crawling. The infant is constantly placing its hands laden with tubercle bacilli into its mouth. The bacteria may gain ingress via the tonsils, or be swallowed and pass through the mucous membrane of the stomach; or the sputum may dry (and in a dark, damp room tubercle bacilli remain viable for a considerable time, and every draught disturbs them) and be inhaled by all in the room, and especially by the baby on the floor. Some of the bacilli are caught up by the moist buccal mucosa to be lodged in the tonsil or swallowed. Others escape, and pass along with the air-current into the trachea and lungs. Whole villages in Kent are being decimated in this way: we find a tuberculous parent and all the children tuberculous. The local authorities are powerless, and say, "The only places we can send these cases to are the cottage hospitals"!

For the State to concern itself in the preservation of the lives of the aged, who are of comparatively no use in the future development of the nation, and devote a vast sum of money to old age pensions, while it allows these tuberculous cases to escape compulsory notification, and

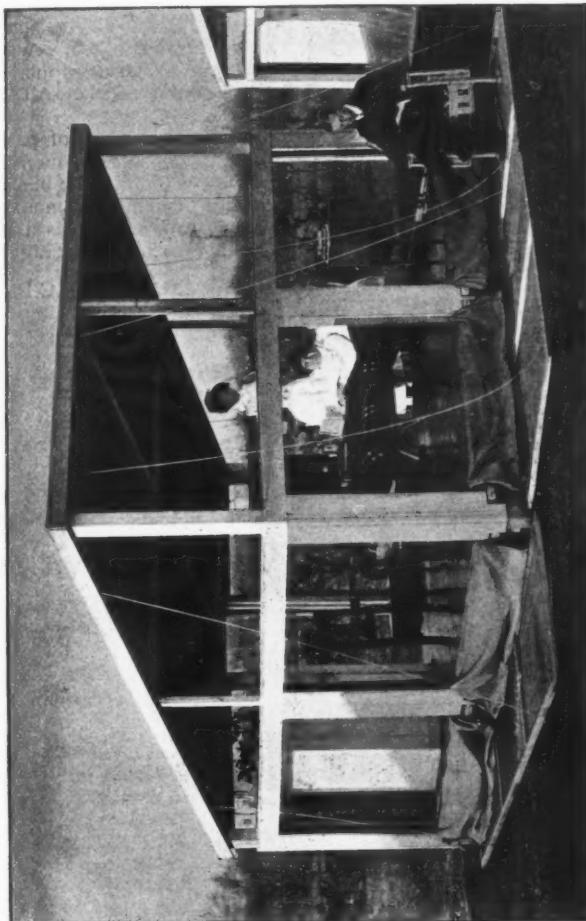
¹ Oeverland, B: "Human and Bovine Tuberculosis," BRITISH JOURNAL OF TUBERCULOSIS, April, 1909.

infect the young subjects of the nation, failing to provide means whereby a parent with many years of potential usefulness before him may secure proper sanatorium treatment, and so be prevented from infecting his young family, whose lives should be of the utmost value to the community, can only be stigmatized as the highest imbecility.

Secondly, that cows whose udders show no signs of tuberculosis may yet excrete tubercle bacilli in their milk is an undoubted fact. Is it not in the highest degree likely that lactating mothers suffering from pulmonary tuberculosis also excrete tubercle bacilli in their milk? So far as I know, this question, so fraught with importance to the suckling infant, has been entirely uninvestigated. Better were it to feed the child with milk infected with bovine bacilli than with mother's milk laden with human bacilli.

INSTITUTIONS FOR THE TUBERCULOUS.

MERIVALE SANATORIUM.



CANVAS TENT AT THE MERIVALE SANATORIUM.

MERIVALE SANATORIUM is charmingly situated on the second highest point in Essex, in the midst of fine open country, and possesses delightful and extensive views across some of the prettiest parts of the

country. It is within easy reach of London, and is only eight miles distant from the sea-coast.

The prevailing climatic conditions are particularly well suited for the treatment of pulmonary and other forms of tuberculosis. The atmosphere is dry and bracing, with an abundance of sunshine, and but little rain.

Patients live in canvas tents, specially designed to admit the maximum amount of light and air. Patients in these canvas tents, in my opinion, usually improve more rapidly than when treated in wooden or brick-and-mortar buildings.

The number of patients at Merivale is limited to ten. As each occupies a separate tent, it is possible to regulate and manipulate the arrangements of each tent to the individual requirements. All forms of tuberculosis are received.

Special tents are also set apart for the accommodation of patients suffering or recovering from other illnesses, or from surgical operations. Cases of neurasthenia, dyspepsia, and all cases likely to be benefited by rest in the open air combined with general hygienic treatment, may be admitted. The charges are from three to five guineas a week inclusive (except personal laundry, drugs, and alcoholic beverages).

H. NORMAN MARRETT, M.R.C.S., L.R.C.P.,
Resident Medical Superintendent.

HEALTH STATIONS.

VENTNOR, ISLE OF WIGHT.

VENTNOR, on the south coast of the Isle of Wight, is situated on a succession of terraces at varying altitudes up to between 400 and 500 feet above sea-level. It is sheltered by high downs behind the town, rising to a height of 800 feet, thus affording protection from



GENERAL VIEW OF VENTNOR.

the north, north-east, north-west, and west winds. It enjoys an equable temperature throughout the year. Careful observations have shown that the average temperature of the town is 7° cooler in summer and 7° warmer in winter than any other place in England.

Ventnor may be resorted to by all who need a genial and equable winter and spring climate. The prevailing climatic conditions allow the tuberculous invalid to reoxygenate his frame by almost daily exercise in the open air at a season when he would be unable to do so at most resorts in England. The air is mild, and yet of a bracing tonic character.

The following facts, taken from my annual report for 1908, give the

more important data concerning Ventnor: Area of district, 744 acres; rateable value, £40,500. Population, census of 1901, 5,866; estimated to the middle of 1908, 6,000. Number of inhabited houses, census of 1901, 1,161; average number of persons per house, 5·05. Density of population, 8·06 persons per acre. Crude death-rate, 1908, 14·16 per 1,000; average for previous ten years, 16·8; corrected death-rate, 1908, 9·66 per 1,000, visitors excluded. Birth-rate for 1908, 15·0 per 1,000; average for previous ten years, 16·6. Infantile mortality, 1908, 66·6; average for previous ten years, 93·7. Death-rate from zymotic disease, 0·33. Mean annual temperature, 51·35. Total rainfall, 23·48 inches.

There are four institutions in the district receiving cases of pulmonary tuberculosis for treatment:

1. The "National Hospital for Consumption," situated a mile distant from Ventnor.
2. "St. Catherine's Home for Advanced Consumption."
3. "Churchill" House.

The sea-bathing is good and safe at Ventnor. Hot sea-water baths can also be obtained, but there is no special provision for children.

The best way to reach Ventnor from London would be from Waterloo Station by the direct Portsmouth route of the L. & S.W.R. to Portsmouth Harbour Station, thence by boat to Ryde Pier Head, and from there by train direct to Ventnor.

E. RUSSELL WOODFORD, M.D., M.CH.,
Medical Officer of Health.

NOTICES OF BOOKS.

IMMUNIZATION.

SIR ALMROTH WRIGHT's work has won for him foremost rank among pioneer pathologists. He is therefore fully justified in issuing his series of studies¹ on the protective elements of the blood—vaccine-therapy and therapeutic immunization—although time alone can show whether he is right to place on his title-page the prophecy that "the physician of the future will be an immunizer." The volume is divided into two sections. In Part I. are placed papers which deal primarily with the protective elements of the blood—agglutinins, bactericidins, and opsonins; while in Part II. are collected articles dealing with means for fighting bacterial infection by those defensive agencies which the organism itself employs in its combat with invading microbes. The researches of the author and his disciples have forced an entrance into a fresh field of knowledge, and it is just to all that we should have this authoritative record of the evolution, nature, and results, of their explorations. Only the three final papers have been revised, and detailed descriptions of technique are reserved for publication in a subsequent volume. Realizing that a collection of studies cannot possess organic unity, Sir Almroth has employed his index ingeniously, making it "something in the nature of an orderly synopsis" and "an agency through which replies might be furnished to certain of my critics." The articles on "The Inoculation Treatment of Tuberculosis" and "On the General Principles of the Therapeutic Inoculation of Bacterial Vaccines as applied to the Treatment of Tuberculous Infection" are of such importance that no student of modern methods of dealing with tuberculosis can afford to neglect them. The latter in particular is a masterly presentation of vaccine-therapy of tuberculosis. The volume is worthy of its dedication to Elie Metchnikoff and Paul Ehrlich as "a tribute of friendship and admiration," for it is the record of investigations which seem to be leading us, not only into a land of new revelations, but into a kingdom of power over disease.

Dr. E. C. Hort's suggestive study on rational immunization,² recently read before the Royal Society of Medicine, now issued in book form, merits careful study. In it the author provides a critical review of the present position of hetero-inoculation, attempts to indicate the unreliability of the tuberculo-opsonic index as at present estimated, and advocates auto-inoculation, both spontaneous and artificial. Autolysis, autolytic toxæmia, anti-autolytic defence, and

¹ "Studies on Immunization and their Application to the Diagnosis and Treatment of Bacterial Infections," By Sir A. E. Wright, M.D., F.R.S., Director of the Department for Therapeutic Immunization, St. Mary's Hospital, London. Pp. 490. London: Archibald Constable and Co., Ltd. 1909. Price 16s. net.

² "Rational Immunization in the Treatment of Pulmonary Tuberculosis and Other Diseases," By E. C. Hort, B.A., B.Sc., M.R.C.P. Pp. 73. With charts. London: John Bale, Sons and Danielsson, Ltd. 1909.

the antitryptic index, are described and discussed. The following are the author's conclusions : "(1) That, when Nature cures infection, she converts tissues and bacteria into auto-inoculating agents, and thereby incites both cellular and bacterial restraint ; (2) that to provoke the last and ignore the first is too often to aim at half and expect the whole ; (3) that, whenever practicable, auto-inoculation is the best method to employ when artificial aid is needed ; and (4) that in thermometric charts and in measurements of the blood's inhibitory powers we have most useful gauges of presence or absence of many kinds of stimulus and response."

THE USE OF TUBERCULIN.

Dr. Egbert C. Morland deserves the thanks of English and American practitioners and students of medicine for his excellent translation of Drs. Bandelier and Roepke's practical guide to the use of tuberculin both for diagnosis and treatment.¹ As the translator justly claims, " It summarizes all the results of importance in a field the literature of which is so enormous and so scattered as to be accessible only to the leisured few." The work is an indispensable vade-mecum to all who have to deal with tuberculous subjects, for, written by practitioners for practitioners, it gives just the practical details required without unnecessary redundancies, and avoids as far as possible controversial and merely theoretical considerations. The volume is divided into three parts : The specific diagnosis of tuberculosis, the specific treatment of pulmonary tuberculosis, and the specific treatment of tuberculosis of other organs. The technique of the cutaneous, percutaneous, conjunctival, and subcutaneous tuberculin tests is fully given, and illustrations, plain and coloured, add much practical value. The authors are enthusiastic and convinced believers in the efficacy of tuberculin : " We now possess a well-based tuberculin-therapy ; the time has come for commanding the remedy, with its new method, to a wider circle of practitioners for individual use." To all desirous of acquiring reliable information regarding the employment of tuberculin in its various forms, this book will be of the greatest assistance. There is a well-selected bibliography, and a list of the various preparations of tuberculin, with their symbols, place of manufacture, and price.

TUBERCULOSIS AND EUGENICS.

In the " Francis Galton Laboratory for National Eugenics " of the University of London, the application of biometric methods and other procedures of precision, under the direction of Professor Karl Pearson, are throwing much new light on the problem of human inheritance. " National eugenics is the study of agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally," and we are glad to find that tubercu-

¹ "Tuberculin in Diagnosis and Treatment: A Textbook of the Specific Diagnosis and Therapy of Tuberculosis for Practitioners and Students." By Dr. Bandelier and Dr. Roepke. Translated from the second German edition by Egbert C. Morland, M.B., B.Sc. (Lond.), M.D. (Berne). Pp. 190. With 19 charts and coloured plate, also a bookmarker with Fahrenheit and Centigrade scales for comparison. London: John Bale, Sons and Danielsson, Ltd. 1909. Price 7s. 6d. net.

losis is being studied by eugenists. In "The Treasury of Human Inheritance"¹ are studies on diabetes insipidus, split-foot, polydactyly, brachydactyly, deaf-mutism, ability and chronic hereditary trophoedema ; but the section which interests us most is that dealing with pulmonary tuberculosis. Dr. W. Bullock furnishes a scholarly introduction, which is followed by a study of "Family Phthisis," by Dr. W. C. Rivers, with a well-selected bibliography. We trust the consideration of these researches will stimulate many medical superintendents of sanatoria, as well as physicians in private and consulting practice, to attempt the preparation of pedigrees of their tuberculous patients.

Students of eugenics would do wisely to read Dr. Saleeby's new work on the subject, which appropriately is dedicated to "Francis Galton, the August Master of all Eugenists."² The work is notable as "a first attempt to survey and define the whole field of eugenics." Dealing with the theory of this new science and art, the author discusses such subjects as the exchequer of life, natural selection and the law of love, the selection of mind, the multiplication of man, the growth of individuality, heredity and education and race-culture, the supremacy of motherhood and marriage, and materialism. In the section on the practice of eugenics, considerable space is devoted to a consideration of the effects of racial poisons, of which alcohol is the most conspicuous. The relation of eugenics to tuberculosis is explained in a section which might well have been extended. The view is taken that "we are wholly without evidence that the hereditary factor counts for anything substantial, even assuming that it appreciably exists at all." Many will agree with the author when he contends that "at the present day discussions as to the inheritance of consumption and tuberculosis in general are not fit for practical application ; and a practical disservice is rendered by those who seek to divert public attention from the removable environmental causes upon which the disease mainly depends." The book is brilliantly written, original in conception, full of suggestions, will arouse thought and excite discussion, and perhaps may lead to real reform in matters relating to racial culture.

TUBERCULOSIS OF THE NOSE AND THROAT.

"The annual mortality from tuberculosis in the United States approximates 150,000, and from eight to ten times this number are affected to some extent with the disease. Statistics compiled from all parts of the world, including private as well as hospital and sanatoria records, show that complicating lesions of the throat occur in at least one-third of all persons with recognizable foci in the lungs. Autopsies upon individuals dead of consumption prove that nearly 50 per cent. have tuberculous lesions in the larynx ; but assuming only one of every four consumptives to be so affected—an ultra-conservative estimate—the fact is established that none other of the

¹ "The Treasury of Human Inheritance," Parts I. and II. Pp. 38. With 13 plates of pedigrees and 5 plates of illustrations. London : Dulau and Co., 37, Soho Square, W. 1909. Price 14s. ; subscription price, four parts, 20s.

² "Parenthood and Race Culture : An Outline of Eugenics." By Caleb Williams Saleeby, M.D., Ch.B., F.Z.S. F.R.S.E., Pp. 331. London : Cassell and Co., Ltd. 1909. Price 7s. 6d. net.

serious diseases to which the upper respiratory tract is subject approaches tuberculosis in prevalence nor in the unhappy consequences which it entails." These are the opening sentences of the preface of Dr. Lockard's monograph,¹ and indicate the author's point of view and main purpose. A useful historical survey precedes careful studies of etiological factors, pathological characters, clinical manifestations, and methods of treatment. The most notable, and certainly the most serviceable feature of the work is the excellent series of coloured plates. These alone mark the volume as one of real value to the practitioner. Considerable space is devoted to treatment. The major portion of the book deals with laryngeal tuberculosis, but there are also good descriptions of the disease as it involves the nasal and pharyngeal cavities. There is much in these pages of interest to the expert laryngologist, but the chief merit of the work lies in the fact that it affords a clear, comprehensive, yet concise exposition of the subject, such as the busy practitioner requires. Medical officers of sanatoria will do well to possess this work. The book is beautifully printed on fine art paper, and is consequently somewhat bulky and heavy.

TUBERCULOSIS AND INFANCY.

There is much promise for the future in the increasing attention which is being paid to the safeguarding of infancy. The problem of infant-feeding is the dominant one in the early days of life. A particularly practical manual, based on lectures delivered to Edinburgh students, has been prepared by Dr. J. S. Fowler.² It is one of the excellent series of "Oxford Medical Publications." Starting with physiological considerations regarding the nature and composition of human and cow's milk, and the digestive powers of the infant in dealing with its natural or substitute food, he passes to a practical and explicit exposition of the various methods by which milk may be supplied suitable in quantity and quality for the requirements both of healthy and ailing infants. Dr. Fowler states that "about 5 per cent. of random samples of milk contain tubercle bacilli, the incidence being greater in country than town specimens." He shows that "abdominal tuberculosis is unusually prevalent in Great Britain as compared to most other countries, and post-mortem evidence shows that at least 25 per cent. of all cases of fatal tuberculosis in children are primarily abdominal." The opinion is expressed that "the risk of tuberculous infection [by means of milk] is very real, and that infants should be safeguarded either by their milk being sterilized, or by its being obtained from tuberculin-tested cattle."

THE HYGIENE OF THE TROPICS.

"Necessity is the mother of invention," and schools of tropical medicine are but the natural outcome of a recognition of the need which we now know to be an imperial necessity. The British medical

¹ "Tuberculosis of the Nose and Throat." By Lorenzo B. Lockard, M.D., Laryngologist and Rhinologist to the Jewish Consumptives Relief Society Sanatorium, etc. Pp. 384. With 85 illustrations, 64 of them in colours. St. Louis, U.S.A.: C. V. Mosby Medical Book and Publishing Co. 1909.

² "Infant Feeding: A Practical Guide to the Artificial Feeding of Infants." By J. S. Fowler, M.D., F.R.C.P.E., Physician to the Royal Hospital for Sick Children. Pp. 230. London: Henry Frowde and Hodder and Stoughton. 1909. Price 5s. net.

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practitioner has now to safeguard lives in the Greater Britain which lies scattered through the world. A new literature on tropical pathology, hygiene, and therapeutics is springing into being. The latest work, and in some ways the best, on the hygiene of tropical and subtropical stations has been written by Professor William J. R. Simpson.¹ The book, based on lectures, deals with climatology and personal hygiene, water and food supplies, disposal of waste products, soil and drainage, communicable diseases, village and town sanitation in relation to malaria and other diseases caused by the mosquito. We could have wished that the author had dealt with the problem of tuberculosis in the tropics. He describes the characters of tuberculous meat, and shows the relationship of insanitary areas to tuberculosis. The work is one which should accompany every medical man voyaging to the tropics or called upon to exercise his professional powers in tropical and subtropical climates. A word of praise is due to the publishers for the first-class manner in which the work has been produced.

Professor Simpson has also written a compact little manual,² at the request of the Committee of the London School of Tropical Medicine, and published under their auspices, dealing with personal hygiene, in a simple but informing style, admirably suited to the needs of missionaries and others whose duties call them to labour in dangerous climates.

OPEN-AIR SCHOOLS.

In all parts of the country open-air schools are springing into being, or are being projected or considered. All concerned for the establishment of these rational and hygienic institutions for children should study the recently issued Report of the Education Committee of the London County Council.³ It fully justifies the establishment of this new type of educational and health-producing centres. In London it seems almost impossible to secure suitable sites, and "the greater the need of a district for such schools, the greater the difficulty of finding a site to which the children can be taken." In the Metropolis open-air schools are considerably more expensive than the ordinary schools, "the gross cost per head per year (exclusive of administrative charges) being £24 11s. 8d. in the one case, as against £6 11s. 4d. in the other; and the grants earned £4 10s. and £1 19s. 6d. per head per year respectively, thus giving net costs £20 1s. 8d. and £4 11s. 10d. respectively. Full details are given respecting the arrangements of the schools, their educational work

¹ "The Principles of Hygiene as applied to Tropical and Subtropical Climates, and the Principles of Personal Hygiene in them as applied to Europeans." By W. J. R. Simpson, M.D., F.R.C.P., D.P.H., formerly Health Officer of Calcutta; Lecturer on Tropical Hygiene at the London School of Tropical Medicine; Professor of Hygiene, King's College, London. Pp. 396. With charts and illustrations. London: John Bale, Sons and Danielsson, Ltd. 1908. Price 15s. net.

² "The Maintenance of Health in the Tropics." By W. J. Simpson, M.D., F.R.C.P. Pp. 118. With illustrations. London: John Bale, Sons and Danielsson, Ltd. Price 2s. 6d. net.

³ "Report of the Education Committee of the Council, submitting a Joint Report of the Education Officer and the Medical Officer (Education) on the Open-Air Schools held at Birley House, Dulwich; Montpelier House, Upper Holloway; and Shrewsbury House, Woolwich, between the 10th June and 31st October, 1908." Pp. 20. With plates. London: Southwood, Smith and Co., Ltd., 93 and 94, Long Acre, W.C. 1909.

and medical management, and notes of many of the scholars. Specimen time and dietary tables are also published, but the most attractive and instructive portion of the report consists in excellent reproductions of photographs of school life in the open.

Bradford, in Yorkshire, is, as usual, to the fore in pioneer educational work, and Dr. Ralph Crowley has prepared a very informing report on last year's experimental open-air school.¹ His remarks on cost merit careful consideration : "No general statement can be made as to the total cost involved in the establishment of an open-air school, so much depending on local circumstances. One is bound to admit that the outlay is in addition to what is already being spent, since no other schools or classes are closed because an open-air school is opened. In some places the question of site may be a somewhat serious one, though, since it is necessary to have the school well removed from the city or town, so long as it can be approached by car, the land required can usually be bought or rented at a comparatively low figure. The building certainly need not cost a great deal ; simplicity should everywhere be the keynote. The cost of maintaining the school, as compared with that of maintaining an ordinary school, will depend largely upon how far the committee have to pay for the food provided and for the car fares of the children. The teaching staff is also rather more expensive, since one teacher is required to about every twenty children. On the other hand, an increased grant is paid by the Board of Education for these children. In regard to the question of cost, however, it should be clearly understood that open-air recovery schools are part of the great movement in favour of preventive medicine ; they must necessarily lead to the greater efficiency of the individual. That the cost will be recovered there can be no doubt, though it is not always easy to demonstrate this in pounds, shillings, and pence."

We have also received a report on the Halifax open-air school,² which concludes : "The desirability of establishing such a school, to be open at least throughout the milder weather, to which ailing and weakly children could be sent for periods varying according to their needs, has been made manifest."

THE OUTDOOR LIFE.

Many influences and agencies are combining to popularize open-air methods. We are particularly glad to welcome the many books now appearing on Nature study and gardening. Messrs. J. M. Dent and Co. deserve special praise for the excellence and cheapness of their "Open-Air Nature Books," edited by W. Percival Westell, F.L.S., and Henry E. Turner.³ We have received a copy of the first of the series, "The Hedge I Know," a delightful study of the flora and fauna of a country hedge, illustrated with thirteen coloured and many black and white illustrations. Such a book should be in the hands of every boy and girl in the land.

¹ "Report of the Medical Superintendent, Ralph H. Crowley, M.D., M.R.C.P., on the Thackley Open-Air School." Pp. 12. Bradford : Education Offices. 1909.

² "Report on Bemerside Open-Air School : July 20th to October 15th, 1908." Halifax : Whitley and Booth. 1908.

³ Full particulars of the "Open-Air Nature Books" (price 8d. each) may be obtained on application to Messrs. J. M. Dent and Co., Aldine House, 29 and 30, Bedford Street, Covent Garden, London, W.C.

Sir Digby Pigott has written a charming Nature story, in which he has employed an ingenious device whereby to view Nature from within.¹ The book is just such a one as children will delight in, and it will reveal much of beauty and beneficence to them.

All outdoor livers should possess this year's "One and All Gardening Annual." It is full of suggestive notes and illustrations on all sorts of topics touching gardening and open-air pursuits, and including articles on the utilization of London's vacant spaces and the floral beautification of the Metropolis. We would also commend the excellent series of "One and All Garden Books," edited by Mr. Edward Owen Greening, F.R.H.S., of which a score have already been published on garden subjects, each being written by an expert, and profusely illustrated.²

MANUALS FOR MEDICAL PRACTITIONERS.

Professor Burney Yeo's work on medical treatment is to be found among the most-used volumes on almost every practitioner's bookshelf, and the new and fourth edition just issued will renew and increase its popularity as a reliable and helpful manual of reference in regard to methods of treatment.³ The author has been assisted by Dr. Raymond Crawfurd and Dr. E. Farquhar Buzzard. The new edition retains its familiar form, but has been thoroughly revised and brought up to date. Considerable space is devoted to phthisis, but three pages seems rather a meagre allowance for a description of "sanatorium treatment," and is, it must be admitted, altogether inadequate. Six pages are devoted to "A List of Sanatoria for the Reception of Phthisical [Paying] Patients," but already this calls for revision. The section on the climatic treatment of pulmonary tuberculosis is excellent, and extends over twenty-two pages, but the section of seven pages devoted to tuberculins and sera is much too brief and general. Under the head of Haemoptysis we can find no reference to amyl nitrite. The work, however, in spite of omissions, is one for which all practitioners will give thanks.

Dr. Thomas Barr's work on affections of the ear is so well known and valued as to be beyond the praise or blame of a reviewer's pen.⁴ The new and fourth edition just issued, entirely revised and largely rewritten, will add greatly to the popularity of this standard

¹ "The Changeling: What a Boy whose Eyes had been opened saw of the Real Life of the Wild Creatures round his Home," By Sir Digby Pigott, C.B. Pp. 183. With illustrations by the Author and Charles Tresidder. London: Witherby and Co., 326, High Holborn, 1908. Price 2s. 6d. net.

² "One and All Gardening Annual" for 1909 (price 2d.) and the "One and All Garden Books" (price 1d. each) are issued under the editorship of Mr. Edward Owen Greening, F.R.H.S., and published by the London Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C., from whom full particulars can be obtained on application.

³ "A Manual of Medical Treatment on Clinical Therapeutics," By I. Burney Yeo, M.D., F.R.C.P., Raymond Crawfurd, M.A., M.D., F.R.C.P., and E. Farquhar Buzzard, M.A., M.D., F.R.C.P. New and fourth edition. Twenty-second thousand. In two volumes. Pp. 802+829. London: Cassell and Co., Ltd. 1909. Price 21s. net.

⁴ "Manual of Diseases of the Ear, including those of the Nose and Throat in Relation to the Ear." For the Use of Students and Practitioners of Medicine. By Thomas Barr, M.D., Lecturer on Diseases of the Ear, Glasgow University, and J. Stoddart Barr, M.B., Ch.B. Fourth edition. Pp. 477. With 3 coloured plates and 215 illustrations. Glasgow: James Maclehose and Sons. 1909. Price 14s. net.

book on aural disease. It is by general admission the most practical manual on maladies of the ear in the English language. One of its most praiseworthy features is the excellence and multiplicity of its illustrations, and practitioners will greatly value the "formulae of remedies." Tuberculous involvement of the ear is dealt with; and in speaking of otorrhoea, the opinion is expressed that "the tubercle bacillus is specially found in very young children." Dr. Stoddart Barr has assisted his father in the preparation of the new edition. The index is a work of art.

Increasing attention is being given to natural therapy. Dr. Luke's new work on the subject should therefore be sure of a welcome.¹ It is just the sort of manual suited to the requirements of the medical adviser who would make himself acquainted with the ways and means of the newer therapy. Unless doctors will fit themselves to counsel their patients in regard to these popular forms of treatment, they will certainly allow them to drift into the hands of irregular practitioners. Dr. Luke's book is therefore to be welcomed as a timely, succinctly and scientifically expressed handbook on the principles and practice of hydrotherapy, thermo- and photo-therapy, massage, electricity, and the dietetic management of disease. There is a good bibliography, numerous illustrations, and the printing and general get-up of the volume is highly creditable to the publishers.

OFFICIAL AND PERIODICAL PUBLICATIONS.

"The Medical Annual for 1909" is truly the indispensable "Year-Book of Treatment and Practitioners' Index." No medical armamentarium can be considered complete without it.² The names of no less than thirty-seven contributors appear in this the twenty-seventh issue of the Annual. Professor E. Beraneck writes on Tuberculin Reactions; Drs. J. G. Emmanuel and L. G. J. Mackey on Opsonins and Vaccines; and Dr. J. J. Perkins, Dr. R. W. Philip, and others, deal with pulmonary and other forms of tuberculosis. There is a fairly complete list of "Sanatoria for Consumptives and other Forms of Tuberculosis." All concerned in the production of this invaluable year-book are to be congratulated.

The Belfast Health Journal is a unique production.³ It is an ambitious and successful attempt to provide reliable information and instruction regarding all matters relating to the health and happiness of the people. It is a storehouse of interesting material respecting Irish life, and particularly that of Belfast. Numerous excellent illustrations form praiseworthy features. We congratulate the editor, Dr. Henry O'Neill, on his public-spirited action in issuing so attractive and informing a journal.

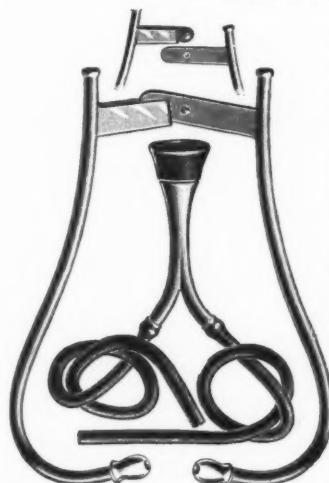
¹ "A Manual of Natural Therapy." By Thomas D. Luke, M.D., F.R.C.S.E., Physician to the Peebles Hydropathic. Pp. 303. With 50 plates and 125 illustrations. Bristol: John Wright and Sons, Ltd. 1908. Price 7s. 6d. net.

² "The Medical Annual: A Year-Book of Treatment and Practitioners' Index." Pp. 911, with 54 plates and 159 figs. Bristol: John Wright and Sons, Ltd. 1909. Price 8s. 6d. net.

³ *The Belfast Health Journal*. Vol. iv., No. 1. Edited by Dr. H. O'Neill. Pp. 134. With numerous illustrations. Belfast: W. and G. Baird, Ltd. 1909. Price 1s. net.

PREPARATIONS AND APPLIANCES.

A NEW BINAURAL STETHOSCOPE.



ALTHOUGH for delicacy and accuracy in auscultation the best forms of the old-fashioned wooden stethoscope can hardly be beaten, yet for general convenience both in hospital and private practice a good type of binaural stethoscope is indispensable. Many patterns have serious drawbacks. A particularly excellent form has recently been introduced by Messrs. Ferris and Co.¹ Its general characters are shown in the accompanying figure. It is neat and compact, and well adapted for the physician's pocket. The detachable clamp is effective, and allows of accurate adjustment of the instrument to the ears, without the disagreeable pressure so often produced by a spring. All parts are of the best workmanship.

OPEN-AIR LIFE AND PROTECTION FROM INSECTS.

Even the best of things may have drawbacks, and it must be admitted that many find open-air methods difficult to follow from the discomfort produced by the invasion of mosquitoes, gnats, midges, and other insects. To all sanatoria and other open-air patients, fishermen and sportsmen generally, travellers, and even holiday-makers, we would commend MUSCATOL.² It is a bland, non-poisonous, clean, soothing, antiseptic, perfumed preparation, easy to apply, and most effective in its action. The convenient and economical means for carrying and using Muscatol by means of a specially designed spray is illustrated in the accompanying figure. Anglers will be well advised to procure this contrivance, for by its use flies may be kept off, and yet the bait prevented from becoming scented.

¹ The new Binaural Stethoscope is supplied by Messrs. Ferris and Co., of Bristol, at 9s. 6d., from whom all particulars may be obtained.

² "Muscatol" and the special "Muscatol Spray" are supplied by Frank A. Rogers, 327, Oxford Street, London, W., the former in bottles, from 1s. to 21s., the latter at 4s. 6d.



A SPRAYER FOR DISINFECTANTS.

The judicious use of disinfectants in hospitals, sanatoria, schools, and public institutions of all kinds, undoubtedly does much towards



the prevention of tuberculosis. Systematic cleansing, with the periodical employment of a reliable disinfectant, should be always insisted on in the cases of apartments used by consumptives, or liable in any way to contamination by tuberculous discharges. Messrs. Newton, Chambers and Co., the well-known manufacturers of Izal and Izal hygienic and sanitary preparations, have made arrangements for the supply to their clients of an excellent appliance for the economical distribution of their disinfectant.¹ The "PERFECTION" SPRAYER, as we can attest from personal investigation, is a simple, strong, cheap, and easily worked machine, providing a fine, widely diffused, and dense spray, well adapted for the speedy covering of walls, floors—or, indeed, any surface at any angle—with a disinfectant or insecticide solution. One of the forms of this convenient spray is shown in the accompanying illustration.

A RELIABLE AMMONIUM CHLORIDE INHALER.

Most inhalers for the administration of ammonium chloride vapour have drawbacks and limitations. Now, however, thanks to the ingenuity of Mr. Frank A. Rogers, the well-known manufacturer of medical sprays, a really satisfactory apparatus is available for the evolution and application of pure neutral chloride of ammonia of unvarying quality and density in a form which is free from all irritation.² The general structure of the KLORAM INHALER is seen from the accompanying figure. Simple, strong, and self-contained, it is easily managed, and disordered with difficulty. It is also compact and conveniently arranged for use anywhere, the apparatus being fitted into a well-designed and strongly made case. If desired, the vapour can be further medicated with various volatile oils. We have tested this appliance, and can thoroughly recommend it. It is sold at a price which must be considered most reasonable, and bringing it within the reach of all.

¹ Full particulars of Izal Disinfectants and the "Perfection" Sprayer may be obtained from Messrs. Newton, Chambers and Co., Ltd., The Laboratories, Thorncriffe, near Sheffield (London Office: 16, Great George Street, Westminster). The price of the "Perfection" Sprayer is: in bright tin, 4s. ; enamelled, 4s. 9d. ; brass, 7s. 6d. They are supplied wholesale by Messrs. Miles A. Hoffman and Co., 43-45, Great Tower Street, London, E.C.

² The "Kloram Inhaler" is designed and manufactured by Frank A. Rogers, 327, Oxford Street, London, W. Price complete, 7s. 6d.



THE "ASEPTICUS" SHIRT.

To medical men especially the new "ASEPTICUS" SHIRT will prove a great boon.¹ It is made of first-class fine longcloth with linen fittings, and either a short stiff or a dress front, with one stud and blunted corner cuff. Its chief benefit and novelty lies in the fact that the sleeves are detachable at the elbow. The two parts of the sleeve are kept in position by four linen-covered buttons, and thus easily and conveniently the lower half-sleeve can be removed for the performance of any operation or for the renewal of clean cuffs. The advantages of such a contrivance are so evident that we believe it only needs to be known to be generally approved and widely adopted.

THE PRESERVATION OF CLOTHES.

Open-air methods, it must be admitted, are to some extent destructive of property, and especially detrimental to clothing. The open-air liver and the country resident has need to pay particular attention to the character of materials used for his clothing. The importance of this is well known to all medical directors of sanatoria, but it is only too often overlooked by the consulting physician when advising consumptives regarding hygienic treatment. Next in importance to the selection of clothes is their hygienic preservation. This is a matter commonly neglected. As a means for retaining trousers in good condition, the new presses introduced by Messrs. Doré and Sons deserve special praise.² They are of first-class workmanship, conveniently adjusted, possessing no loose screws or parts, very strong and thoroughly reliable. The INCOMPARABLE X PRESS is fitted with a double wood lever, but forms may be obtained with one lever, and are highly effective, as we can attest from personal use. A small form is made for travellers. We have no hesitation in strongly recommending these presses to those requiring a simple yet reliable presser, constructed on sound scientific principles, easy to use, and without drawback in action.

HYGIENIC CLOTHING.

The provision of proper clothing is of primary importance both in the prophylactic management of the healthy and the therapeutic treatment of the sick. In the restoration of the tuberculous and in the care of the tuberculously disposed, the rôle of clothing has been too little considered. Opinions differ considerably in regard to this question of dress. One school advocates wool and silk, while another claims the greatest advantages for some form of cellular cotton textures. The makers of "VIYELLA,"³ by the skilful combination of wool and cotton, seem to have succeeded in obtaining much of the special advantages belonging to both animal and vegetable products,

¹ The "Asepticus" Shirt is a registered design, manufactured by Messrs. Lawry and Porter, Ltd., 32, Monkwell Street, London, E.C., but may now be obtained from most gentlemen's outfitters, price 5s. 6d.

² Full particulars regarding the "Incomparable X-Press Presser" (which varies in price from 17s. 6d. to £2 2s.) may be obtained on application to Messrs. Doré and Sons, Ltd., 80, King William Street, London, E.C.

³ "Viyella" goods may be obtained from all leading drapers, hosiers and ladies' outfitters, or the name of the nearest will be sent on application to the manufacturers, Messrs. William Hollins and Co., Ltd., 25 and 26, Newgate Street, London, E.C.

while avoiding the disabilities which hitherto have been incident to wool and cotton fabrics. The mixture of the ingredients takes place before the spinning of the yarn. This is the manufacturer's secret. Viyella goods are non-shrinkable in washing, give a sense of warmth without irritation to the skin, are light in weight, allow of free ventilation, wear well, and are available in almost limitless variety of artistic designs for subjects of every age and all ranks. For infants, invalids, and tuberculous patients, "Viyella" is unrivalled. Knowing how difficult it is to provide hygienic protection for the hands of consumptive patients, many of whom suffer cruelly from chilblains during the winter, we desire to specially recommend the excellent "Viyella" gloves, which are soft, durable, comfortable, don't shrink, and can be regularly washed.

A HYGIENIC SANATORIUM CHAIR.

A good reclining chair is an absolute necessity for the rational treatment of every tuberculous subject. To all livers of the outdoor life it is an essential equipment. Few cheap chairs are satisfactory. The well-known firm of J. J. Allen, Ltd., of Bournemouth, have, however, introduced the QUEEN MAUD SANATORIUM HAMMOCK CHAIR, which is one of the most hygienic and reliable we have seen.¹ It is used extensively in the Royal National Sanatorium for Consumption at Bournemouth. The frame is strong and well finished, and both back and leg rests are covered with double sail-cloth laced where they join. This allows the hammock to revolve with movements of the patient, and provides for easy detachment to allow of thorough cleansing. We commend this excellent and inexpensive chair to the notice of medical superintendents of all sanatoria.

THE "HELPTOPHONE."

Medical practitioners and others who are obliged to make constant use of the telephone will find the "HELPTOPHONE" a novel but highly serviceable contrivance for diminishing the irritation incident to the use of this now indispensable instrument.² It is, in fact, an adjustable telephone-holder which can be fixed to desk, wall, or table. As the inventors contend, it "saves time, trouble, and temper," for, holding the telephone in a convenient position, it allows it to be swung clear of papers, inkstand and the like, and yet by the free movements arranged for, permits of its being available at a moment's notice.

A FIRE EXTINGUISHER.

Every sanatorium and hospital of any importance is now equipped with appliances for expeditiously dealing with an outbreak of fire, but where chalets are in use, and also in many private houses, the means are usually inadequate or absent. As a convenient form of extinguisher, KYL-FYRE deserves consideration.³ It consists of a dry powder con-

¹ The Queen Maud Sanatorium Hammock Chair is made by Messrs. J. J. Allen, Ltd., The Quadrant, Bournemouth. Price 18s. 6d., or with table and writing slope, 2s. 1d. extra.

² The "Helptophone" is supplied by Messrs. Balharrie and Hill, 90-92, Banner Street, St. Luke's, London, E.C. Price 15s. complete.

³ Full particulars regarding "Kyl-Fyre" may be obtained from the manufacturers, Kyl-Fyre Limited, 12, Elm Buildings, Eastbourne.

tained in an attractive and strikingly coloured cylindrical tin case, about 20 inches long by $2\frac{3}{4}$ inches diameter, and weighs 6 pounds. A strong metal loop at the top allows of its being suspended anywhere. In case of outbreak of fire, the tube is firmly grasped and pulled, when the cap is left on the hook and the fire-extinguishing contents are ready to be thrown into the base of the flames. The powder is said to be harmless to machinery, furniture, fabrics, and even pictures and books. Having tested "Kyl-fyre," we are of opinion that it affords a reliable, cheap, and easily manipulated agent, which might well be employed in sanatoria as well as in all private houses. For use in connection with motor-cars, a special solid brass or nickel-plated extinguisher is available.

A NEW PAINT FOR OPEN-AIR METAL WORK.

"LUSTROGEN" ALUMINIUM PAINT should be known and used in all establishments where metal work is exposed to atmospheric conditions.¹ It gives a bright, attractive surface, impervious to heat and damp, and unaffected by oil, grease, or petrol. It is easily applied, and presents a highly decorative effect. Having used it, we are of opinion that its employment in hospitals and sanatoria will be of invaluable service.

A NOVEL FACE PROTECTOR.

A "Patent Zymotic Face Protector" has been introduced by Messrs. E. and R. Garrould, intended for the use of doctors and nurses attending cases in which they are exposed to the involuntary expectoration of infective matter.² The shield is simple in construction, as is shown by the accompanying illustration. It consists of a plate of thin aluminium with a transparent outlook, and is readily adjusted to the head by an elastic band. For cases like diphtheria, and in the examination and treatment of some cases of tuberculosis of the larynx and pharynx, the protector should be of real service.



AN ADJUSTABLE WINDOW VENTILATOR.

Dr. A. W. Martin, the Medical Officer of Health for Gorton, Manchester, has designed a simple, cheap, and useful form of air-filter which should do something to popularize open-air methods.³ It consists of a wooden, adjustable frame, covered with special muslin, and so made as to fit into the open window-space below the lower sash. It is an extremely simple contrivance, readily fixed, easily renewed, affording protection against dust, soot, and insects, and altogether should encourage the cult of the open window.

¹ "Lustrogen" Aluminium Paint is manufactured by Messrs. Clemons, Marshall, and Carbert, Hunslet Road, Leeds.

² The "Patent Zymotic Face Protector" is supplied by Messrs. E. and R. Garrould, 150, Edgware Road, Hyde Park, London, W., at 10s. 6d. each.

³ The "Adjustable Window Ventilator" is supplied by The Nurses' Outfitting Association, Ltd., 113, Wellington Road South, Stockport, at prices from 1s. 10s. 3d., according to size and quality of muslin cover.

THE PREVENTION OF DUST.

Dust has been characterized as "matter out of place"; but, in addition to its deleterious effects on property, it often acts upon human tissues as a direct irritant. Dust also may furnish a carrier for the germs of tuberculosis and other diseases. To allay dust, therefore, becomes a hygienic duty. Attention should thus be given to DUSMO and LYDUS, two new preparations introduced by the Dusmo Company, Limited.¹ "Dusmo" is a special powder, chemically prepared for use on carpets. It is cheap, effective, harmless, and readily applied, and marks a great advance over the old-fashioned and clumsy use of tea-leaves, wet sawdust, and the like. "Lydus" is for use exclusively on linoleum, wood, and stone floor, and all uncovered surfaces. It is therefore specially useful in schools, churches, institutes, warehouses, etc. It is a hygroscopic powder, having not only cleansing but disinfectant properties.

DENTAL HYGIENE.

In the prevention and treatment of tuberculosis strict supervision should be exercised in regard to the hygienic care of the mouth and teeth. This is often overlooked or neglected even in sanatoria. "MYSANTAL" dental preparations provide reliable means for a scientifically directed care of the teeth. The "Mysantal" tooth-brush is a novelty; it has been specially constructed with regard to the anatomy of the oral cavity. The tufts of bristles are spaced out to allow of proper access to the teeth, and they are securely fixed in aluminium mounts. The "Mysantal" dentifrice has been prepared under the direction of Professor Benninghoven of Berlin, and is an effective and pleasing preparation.²

WOOD PRESERVATION.

Many sanatoria are constructed almost entirely of wood, and in all open-air establishments structures made of wood suffer much from the effects of weather. Not a few, therefore, will welcome the new ATLAS WOOD PRESERVER. It is a preparation which impregnates the fibre of the wood with a disinfectant and preservative, not only lengthening the life of the wood treated, but destroying all forms of animal and vegetable parasites lurking in the crevices. It is said also to render wood less inflammable. For all wooden structures like open-air châlets and Liegehallen the use of this preservative will prove of much value.³

A NEW THROAT SPRAY.

Messrs. Allen and Hanbury have sent us a specimen of their new throat spray, which, after testing, we have no hesitation in strongly recommending. It is designed for use with aqueous non-corrosive solutions, is simple yet strong in construction, very efficient and in-

¹ The Dusmo Company, Ltd., Manufacturers of Sanitary Dustless Sweeping Powders, of West Ham Lane, Stratford, London, E., will send a copy of their booklet, "The Dust Evil," on application.

² Full particulars of the "Mysantal" dental preparations may be obtained from the Meyer-Sander Dental Supply Co., 55, Berners Street, Oxford Street, London, W.

³ The Atlas Preservative Co., Ltd., Windmill Lane Wharf, Deptford, London, S.E., will send full particulars on application.

expensive. This firm now provides Tablets for the easy preparation of nasal sprays and irrigations, and also "Atomols," or solutions for application in the form of spray to the nose and throat.¹

WASHABLE PAINTS.

In the maintenance of strict cleanliness, the introduction of washable paints and enamels has done much to assist the hygienist. These, for use in hospitals and sanatoria, and, indeed, for the decoration of many modern dwelling-houses, are displacing the old-fashioned and insanitary wall coverings of paper. ANDERSON'S WASHABLE WATER PAINTS are of exceptional merit.² They are available in an extensive series of colours, and offer many advantages. The colours are fast to light, unaffected by gases, resist the action of lime, and so can be applied to new walls. The paint is really washable, furnishes a hard, smooth, durable surface, without odour, and free from tendency to rub off or scale. These paints are non-poisonous, and contain neither arsenic nor copper. They possess disinfecting properties, and are said to be fire-resisting. As far as we have been able to test them, they have proved highly satisfactory.

NEW THERAPEUTIC AND PHARMACEUTICAL PREPARATIONS.

Messrs. Allen and Hanbury have sent us specimens of their "KAMFOLIA" TOILET REQUISITES.³ These elegant cosmetic and hygienic preparations for the dressing-table all contain pure camphor as one of their important ingredients. As reliable applications for the skin and hair, these antiseptic, non-irritating, cleansing soaps, creams, powders, and hair-washes cannot be surpassed. We commend them to the notice of both healthy and delicate persons.

An excellent series of diminutive but highly effective and most convenient oral medicaments have recently been introduced under the group-name of "FRUCTAL LOZENGES."⁴ They contain such therapeutic agents as menthol, carbolic acid, heroin, terpene hydrate, oleum pini pumilis, oleum eucalyptus, morphia, and ipecacuanha. They will prove of much service both for their local as well as general effects.

GLUCAPHEN is a new nutrient containing the proteid ingredients of milk and wheat, combined with glycerophosphates.⁵ For delicate subjects, convalescents, and patients suffering from wasting diseases like consumption, it should prove of considerable service. It can be prescribed as a separate ingredient in the day's dietary or given with almost any form of food at the ordinary meals. Tuberculous children will find Glucaphen most helpful.

¹ Price-lists of the above may be had on application to Messrs. Allen and Hanbury, Ltd., 7, Vere Street, Cavendish Square, London, W.

² Full particulars regarding the so-called "A.W.P." may be obtained from Messrs. W. Anderson and Son, Ltd., Roach Road Works, Old Ford, London, E.

³ Details regarding the series may be obtained on application to Messrs. Allen and Hanbury, Ltd., Plough Court, 37, Lombard Street, London, E.C., and 7, Vere Street, W.

⁴ Formulae of the ten varieties of "Fructal Lozenges" may be obtained on application to Frank A. Rogers, 327, Oxford Street, London, W.

⁵ "Glucaphen" is manufactured by Mr. Frank A. Rogers, 327, Oxford Street, London, W.

NOTES.

OPEN-AIR HOUSES.

EVEN if the adoption of open-air methods had done little or nothing for the delicate and diseased, the benefits of country life and fresh air for the healthy are so abundantly evidenced as to be beyond any denial and past all discussion. As a matter of fact, the adoption of open-air principles in the conduct of hygienic living is fast revolutionizing our methods of procedure, and is changing not only personal habits, but altering architectural devices, modifying the

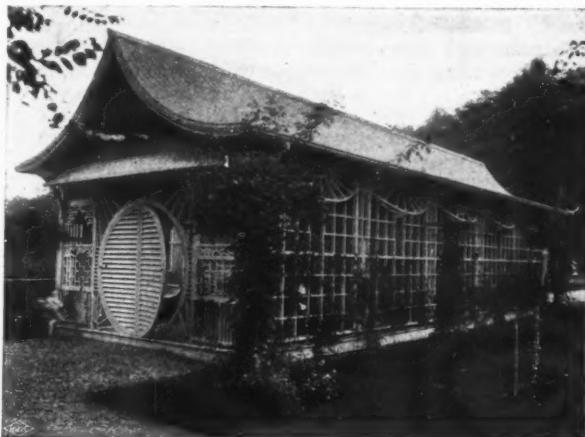


A JAPANESE OPEN-AIR SUMMER-HOUSE.

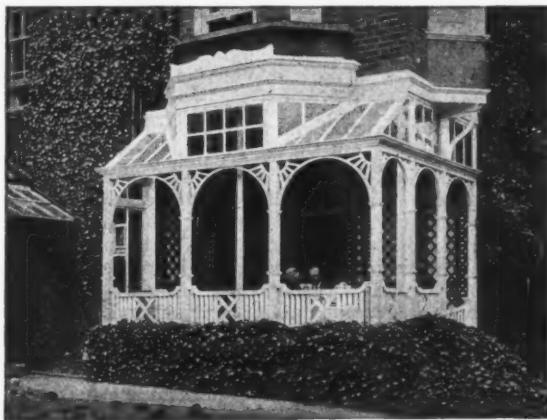
arrangements of home and school and office, and rectifying much in the order and direction of civic and national affairs. And all this is to the good. As evidence of what we say, reference may be made to the provision which is now being made whereby lovers of fresh air may enjoy meals in what are practically outdoor houses. Mr. John P. White, to whom we are indebted for the loan of the blocks of the accompanying illustrations, is a pioneer in the production of artistic outdoor breakfast and tea houses.¹ In this matter we may learn much from the Japanese. The above illustration shows a charming form of summer-house adapted from a Japanese model, and such as is now available for patients and health-seekers in this country. As an elaborate outdoor breakfast-house, the one in Chinese style recently erected at Loudwater House, near Rickmansworth, is worthy of

¹ For particulars and prices of these and other open-air houses and shelters see the elegantly printed and finely illustrated "Garden Furniture and Ornament," issued by Mr. John P. White, of the Pygble Works, Bedford, and 134, New Bond Street, London, W.

consideration. But for ordinary dwellings all that can be hygienically desired may be attained by such an arrangement as that shown below, where, in place of an old-fashioned, stuffy conservatory, a pretty and



OPEN-AIR BREAKFAST-HOUSE IN CHINESE STYLE.



OPEN-AIR CONSERVATORY.

convenient open-air breakfast-room has been provided. These illustrations will be sufficient to indicate the large field for artistic design and practical enterprise which the rational application of open-air methods opens both to architects and builders.

OPEN-AIR OCCUPATIONS FOR WOMEN.

Girls and women pay heavy toll to tuberculosis. This, at least in a measure, is probably due to the indoor life under bad hygienic conditions which so many lead, either from choice or the necessity of occupation. In the after-care and rational management of female patients discharged from sanatoria great difficulty is generally experienced in finding suitable outdoor work. Prevention, in matters tuberculous at least, is better than cure, and we are convinced that much trouble might be prevented by a wise foresight on the part of parents and physicians. In the case of girls coming of a family stock



A HEALTHY OCCUPATION FOR WOMEN: FRUIT CULTURE.

known to be predisposed to tubercle, real wisdom would direct the selection of an open-air school during childhood and the pursuit of such a profession as can be carried on under the best conditions for the maintenance of a high power of resistance to tuberculous infection. Undoubtedly for such cases the career of a professional gardener is specially attractive, and is certainly one rich in possibilities, not only for health, but for a useful and happy livelihood.¹

SCHOOL GARDENS.

School gardens are becoming popular both among pedagogues and pupils, and are to be welcomed on hygienic as well as educational grounds. In the establishment of open-air schools, the garden must be given a prominent place. All sanatoria for children should be

¹ We would advise those desirous of obtaining full particulars regarding course of instruction and cost to consult Dr. Lillias Hamilton, Warden of the Countess of Warwick's Horticultural College for Women, Studley Castle, Warwickshire. We are indebted to the courtesy of the Editor of *The Country Home* (London: Archibald Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C.; monthly, price 6d.) for permission to reproduce the above illustration.

provided with gardens in which health-giving employment can be found both for mind and body. In connection with many elementary and other public schools, both in this country and America, gardens are being provided. In some cases, even waste ground in urban centres is being set aside for use as school gardens. In the playground and the garden children will develop the best powers for withstanding tuberculosis and other diseases. Those desirous of establishing



BOYS AT WORK IN A SCHOOL GARDEN.¹

gardens for city children should acquaint themselves with the details of "The Children's Garden Movement" in the United States of America.²

TUBERCULOSIS EXHIBITIONS.

Among modern educational measures for the combat with tuberculosis, the Tuberculosis Exhibition must be given a foremost place. In America, Ireland, and various parts of Europe, it has proved of the greatest service in affording a popular means of imparting instruction. All will therefore sympathize with, and we trust generously support, the wise action of the National Association for the Prevention of Consumption and other forms of Tuberculosis

¹ We are indebted to the courtesy of Mr. Edward Owen Greening, Editor of "One and All Gardening Annual," for the loan of the block of the above illustration taken from the issue of 1909 (London : The Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C.).

² All inquiries should be addressed to Mr. Henry Griscom Parsons, Secretary of the International Children's School Farm League, 29, West Fifty-sixth Street, New York City, U.S.A.

(Offices : 20, Hanover Square, London, W.) in establishing a Tuberculosis Exhibition which, "while not entirely neglecting the scientific aspect of the subject, will be chiefly of a popular and educational character, and will seek, by the help of diagrams, models, actual specimens, and other means, to bring home to the people the nature of the disease, the extent of its ravages, and the possibility of its prevention and cure, as well as the methods to be employed. Popular lectures, homely talks, and lantern demonstrations will be utilized to this end." Dr. H. Hammond-Smith, the organizing secretary, is to be congratulated on the success of the exhibition which was opened at the Art Gallery, Whitechapel, by the President of the Local Government Board, Rt. Hon. John Burns, M.P., on June 2 last. It furnished an excellent exposition, and the lectures, demonstrations, and conferences held during the exhibition were well attended and highly appreciated. It is intended that the exhibition shall visit the poorer districts of London in turn, and afterwards make an extended tour of the provincial cities and towns of this country. It is also hoped that the work of the larger scheme may be supplemented by smaller portable exhibitions in travelling vans, so that the same propaganda may be pursued in country districts. Now that the National Society has taken this forward step towards carrying out a popular anti-tuberculous movement—so much needed in this country—we trust that the campaign will be conducted with enthusiasm and scientifically directed common sense, and that all will co-operate in making this hygienic mission an unqualified success.

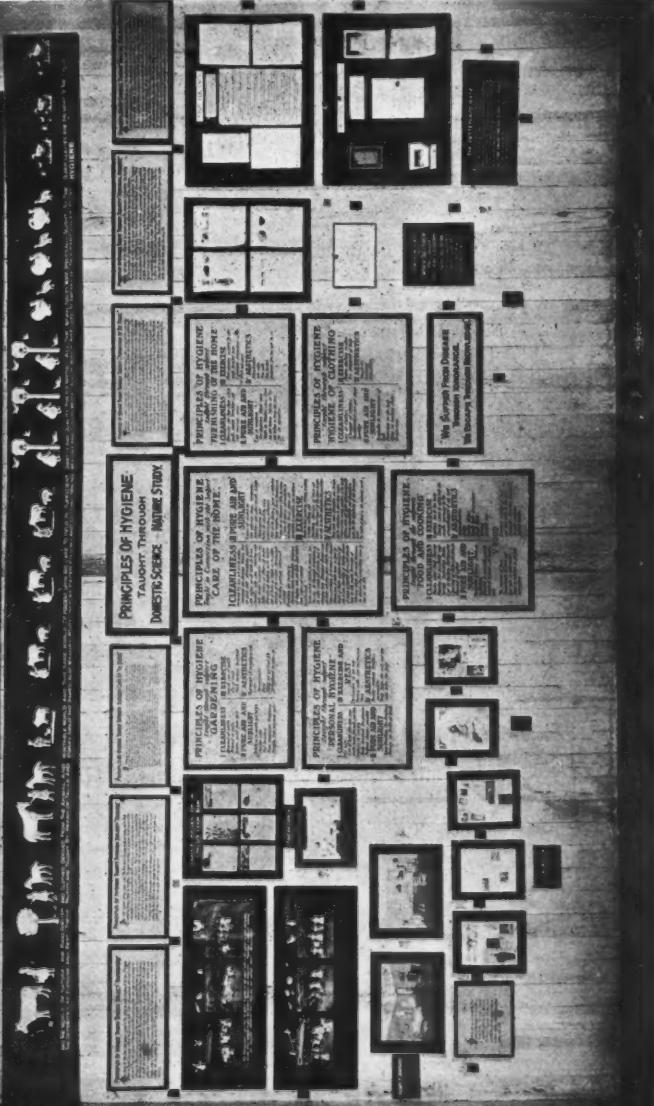
The Countess of Aberdeen and her co-workers have recently held another Tuberculosis Exhibition in Dublin, and exhibitions are being held in other parts of Ireland. It is to be hoped that these will do much to dispel the ignorance of those who ought to know better, but are selfishly and foolishly opposing the scientifically sound and humane policy of the Women's National Health Association of Ireland.

We have recently received a copy of the "Programme Catalogue" of the Montreal Tuberculosis Exhibition held under the auspices of the Montreal League for the Prevention of Tuberculosis. It contains references to no less than 1,419 exhibits, and may be taken as a model which should speedily be copied in all parts of the Empire.

In "A Narrative of the Work done in a Year by the Boston Association for the Relief and Control of Tuberculosis" (pp. 48; Boston, Mass., U.S.A. : 4, Joy Street, 1908. Price 15 cents), in addition to particulars of "The School of Outdoor Life" and other work conducted by the Association, there are details of the "Laws of Hygiene taught through Domestic Science and Nature Study to Children from Four to Sixteen Years Old, as a Means of Prevention of Tuberculosis," at the Louisa M. Alcott and Hawthorne Clubs. Some idea of the excellence of this work will be seen from the accompanying illustration.¹ All teachers in open-air schools should study the scheme elaborated by Miss Isabel F. Hyams, chairman of the sub-committee on Hygienic Education for Children.

¹ We are indebted to Miss Isabel F. Hyams and the Secretary and Council of the Boston Association for the Relief and Control of Tuberculosis for the loan of the block from which the accompanying illustration has been prepared.

THE BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS
RYTHING ON THIS WALL USED IN INSTRUCTION OF LOUISA M. ALCOTT CLUB.



SECTION OF EXHIBIT AT WASHINGTON INTERNATIONAL CONGRESS.
Frieze, pictures, and illuminated compositions done by the club children. Special silver medals awarded for this pioneer work.

PATHS OF PROGRESS.

The Anti-Tuberculosis Campaign is being waged strenuously but scientifically in nearly every civilized country. As we have often urged, in this fight all nations should combine against the common foe. Much ingenuity and skill is being displayed in the application of modern endeavours to circumvent the enemy. In Chicago recently, after a widespread agitation in the press and on the platform, an overwhelming majority of the citizens voted in favour of the levy of a small tax to erect and maintain a sanatorium for consumptives. This result was in great measure the outcome of effective educational work conducted by the Chicago Tuberculosis Institute¹ and the City Health Department.

The New York State Department of Health have issued a striking illustrated poster and pamphlet indicating in effective pictorial form the chief points in the prevention of tuberculosis. Medical Officers of Health and others will be glad to know that they may now be obtained for use locally in this country.²

Dr. T. N. Kelynack, in the new volume of the Annual of the London Charity Organization Society, furnishes a general review of the progress made in the Anti-Tuberculosis Campaign during the past year.³

Tuberculosis classes, and other measures directed to the organized after-care of consumptives discharged from hospitals and sanatoria, are accomplishing beneficent work.⁴

Several sanatoria are now wisely issuing their own records in the form of an attractive and illustrated journal.⁵

THE EIGHTH INTERNATIONAL TUBERCULOSIS CONFERENCE.

The above Conference meets in Stockholm from July 8 to 10, under the patronage of His Majesty King Gustaf V. The chief subjects selected for discussion are: "The Care of Tuberculous Families and the Protection of Healthy Children," "The Application of Specific Measures in the Diagnosis and Treatment of Tuberculosis," and "Tuberculosis in the Schools." All particulars may be obtained from the Secretary-General, Professor Dr. Pannwitz, "Der Internationalen Vereinigung gegen die Tuberkulose," 137, Berliner Strasse, Charlottenburg, Berlin.

¹ See Annual Reports of the Chicago Tuberculosis Institute, including Reports of the Edward Sanatorium, Naperville, Illinois. Chicago: 51, La Salle Street.

² Specimens and full particulars may be obtained on application to the proprietors of *The Medical Officer*, 36-38, Whitefriars Street, London, E.C.

³ "The Arrest of Tuberculosis," in "The Annual Charities Register and Digest." Edited by C. S. Loch. London: Charity Organization Society, Denison House, Vauxhall Bridge Road, S.W. 1909.

⁴ See First Annual Report of Committee on Social Service of the Out-Patient Department of the Hospital of Pennsylvania.

⁵ See *The Rutland Journal*, the monthly organ of the Massachusetts State Sanatorium. Yearly subscription, 25 cents.